There is a small white spot on each suprascapular, one on the pectoral, and five cross bars, irregular and interrupted, on the dorsal and sides, with a spot or two on the interspaces. These white marks are not alike on both sides of the fish, and are likely therefore to vary considerably in different individuals.

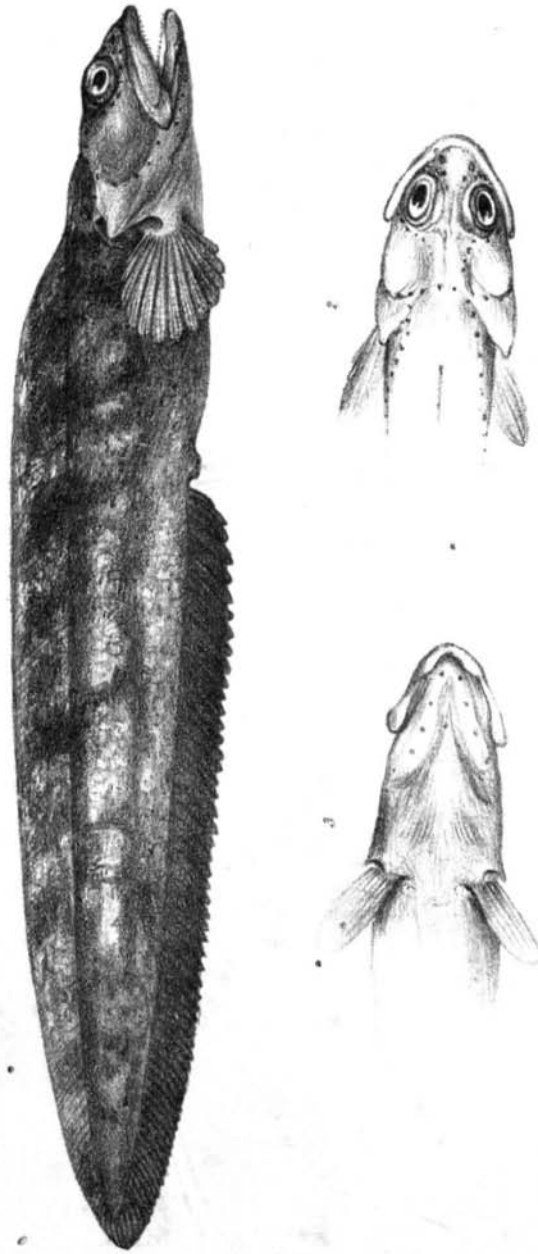
Osteology.

The larger specimen, whose skeleton has furnished the following particulars, was blanched, probably from having lain exposed on the ice or beach, but some markings similar to those described above could be made out.

The vertebræ are in the whole column 92, of which 26 are abdominal. The parapophyses of the three next the cranium are not developed, but are conspicuous enough in the others, though short throughout the abdomen; they lengthen much in the caudals, and bend down to form the hæmal spines. The ribs, round and slender, are not long, and there is a short subulate appendage springing from the end of each parapophysis. The neural and hæmal spines are longest at the beginning of the anal, and shorten gradually as they approach the tip of the tail. Skull perfectly flat on the top, without crests, but with some irregular depressions on the supratemporal and suprascapular angles. Opercular pieces thin and unarmed; infra orbitars indistinct and membranous; branchiostegous rays round, tapering and curved, and rather long.

Dimensions.

	Spec. 1.	Spec. 2.
Length from premaxillary symphysis to edge of gill-opening	1·7 in.	2·4 in.
Length from ditto to vent	3·5	5·5
Length from vent to tip of caudal	3·5	5·5
Total length	7·0	11·0
Height of head at the nape	0·8	1·0
Height of body at middle of pectorals	1·2	1·5
Breadth of head at the preopercula	1·1	
Length of pectorals	1·0	1·5



This fish was obtained in Northumberland Sound. It feeds on small crustaceans, fragments of many being found in its stomach.

Alimentary Canal.—Coats of the part which descends from the pharynx for about an inch and a quarter thick and strong, the lining membrane being disposed in acute longitudinal folds studded with coarse *villi*. The rest of the stomach is of greater diameter, bends on one side on the descending branch and bulges largely on the other, producing an obtuse sac. The pylorus is much contracted, and is surrounded interiorly by a narrow fold, acting as a valve against the regurgitation of the contents of the intestine. Immediately beneath it are the orifices of two small, wide and short, almost globular, cæca, one on each side. The coats of the remainder of the intestine are delicate, with a villous interior membrane. This portion of the canal makes two doublings. Posterior to its anal extremity is the urinary bladder, which has strong coats, and is about three-quarters of an inch long. Adjoining to it is the ovary, containing many ova.

The specimens were procured in Northumberland Sound, as were all the others of Sir Edward Belcher's collection.

GYMNELIS VIRIDIS (Reinhardt).

Ordo *Anacanthini*, Müller.

Ophidium viride, Fabricius, Fauna Grœnland., p. 141, No. 99; Ross (Sir Jas.), Suppl. Parry's Third Voyage, p. 110.

Gymnelis viridis, Reinhardt, Ichth. Bidrag til den Grönland. Fauna, Kjöbenhavn, 1837, No. 53, p. 49. Idem, Beretningen an det Kongl. Videnskabernes Selskabs Forhandlinger, 1830 og 1833.

Radii: Br. 6–6; D. A. C. unitæ 164; P. 13.

PLATE XXIX., nat. size.

In the 'Règne Animal,' Cuvier informs us that he was unacquainted with the *Ophidium viride* of Fabricius, but that he believed it to be allied to the eels. The erroneousness of this opinion was pointed out by Professor Reinhardt, who had

access to many Greenland examples of the fish, and a cursory examination is sufficient to show that it has neither the coalescent parts of the nasal vertebra, which is one characteristic of the eels, nor their peculiar branchiostegous rays. In very many particulars of its structure *Gymnelis* approaches closely to *Lycodes* or *Zoarces*, but the German naturalists place it in Müller's order of *Anacanthini*. In the works above quoted Professor Reinhardt promises to give, in a future communication, a detailed account of the genus and species; but if he has executed his design, I have not been able to find the work in our London libraries. In the absence of such details and of authentic examples of the Greenland fish for comparison, I cannot be certain of the specific identity of Sir Edward Belcher's specimen, and there is some doubt even as to the number of its fin-rays. These cannot be accurately counted through the thick integument, and I designed to make a skeleton of the specimen after it had been drawn; but though the external form of the fish was well preserved by immersion in spirits, the thick mucus which covers the skin had prevented the fluid from arresting the progress of decay in the interior; whence it followed, that after a brief maceration in water, the whole fell to pieces and the rays split up, so that an accurate enumeration was impossible. The numbers of those in the three vertical fins are however a pretty close approximation. Reinhardt reckons ninety-seven in the dorsal to the point of the tail, and seventy-one in the anal, the rays of the caudal being divided between these numbers, which added together make 168, or four more than I was able to reckon in Sir Edward Belcher's specimen.

The *Ophidium Parrii* of Sir James Ross must be very unlike *viride*, in having a much larger head, whose length is equal to one-third of that of the body, and in the great size of the pectoral fins, which when spread out extend beyond the vent and completely cover the whole of the belly and throat. The vertical fins also have much fewer rays, being only fifty on the dorsal side to the point of the tail, and forty-five on the anal side. Indeed the dissimilarity is enough to raise a doubt even

in regard to the genus. I have tried in vain to find a specimen of it in our public museums.

Description of G. viridis.

Form.—Much like that of an eel. Head roundish; body slightly compressed, its width being little less than its height, and the back narrower than the belly, which is tumid; beyond the anus the compression gradually increases, so that the tail resembles the blade of an acute-pointed two-edged sword. The length of the head is contained five times and a half in the total length of the fish. Nostrils piercing the side of the snout close to the premaxillary, one of each pair being shortly tubular. Mouth at the extremity of the head, but the mandible is just perceptibly longer than the premaxillary. A single row of small *teeth* exists on both these bones, the rows being doubled irregularly close to the symphyses above and below. There is also a row of minute palatine teeth, but none on the vomer. The teeth are short and slender, but not very acute, and are not crowded except at the symphyses; they number about eighteen on each premaxillary and limb of the mandible, and about half as many on each palatine.

Eyes small, very much nearer to the tip of the snout than to the gill-opening, and separated from each other by a narrow smooth space, which appears depressed, owing to the eyeballs swelling above the profile of the forehead. No spinous points exist on the head.

Gill-openings small, and descending no lower than to the upper ray of the pectorals. A small triangular apex of the gill-flap projecting across the opening cuts off, towards the temples, a rounded portion, as may be noticed in Plate VII. fig. 1, and better as to form in Plate VIII. The skin connecting the limbs of the mandible and covering the branchiostegous rays is evenly continuous with that of the belly, without forming any transverse fold or free edge between the gill-openings, such as exists in *Gunnellus*.

Branchiostegous rays six, round, tapering and curved, pretty large and readily seen.

Skin scaleless, smooth to the touch, and very loosely attached to the muscles. When narrowly inspected it exhibits a vast number of very fine vertical, rough-looking lines, with smooth intermediate spaces, that are scarcely discernible by the unassisted eye. These lines appear to be minute folds due to the action of subcutaneous muscles, for no traces of them appear in the stretched skin when placed under a microscope: the magnified integuments appear then to be studded throughout with innumerable small, round, glandular bodies.

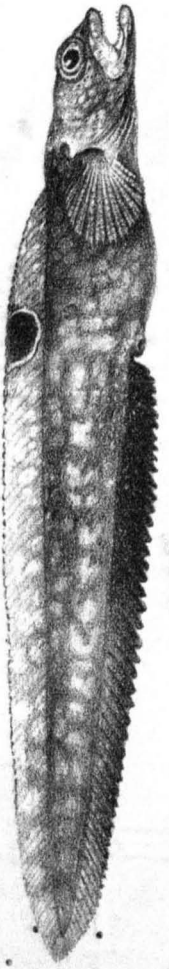
The *lateral line* runs below the middle height of the body, to which it descends gradually from the suprascapulars, and is composed of distant minute, open pores, which disappear a little beyond the anus.

Fins.—Small skinny lobes surmount the tips of the anal rays, and similar though less conspicuous ones terminate the lower rays of the pectorals; and they also exist, though more indistinctly and smaller, on the dorsal. The rays of the pectorals are branched at the tips; those of the dorsal are fissured, the first one alone being simple, taper, and shorter than the following ones, without evident joints. The first three anal rays are small, but, like all the rest, distinctly jointed. At the extremity of the spinal column the short slender rays which represent the caudal are curved down, so as to form, as it were, the last anal rays. Whether this peculiar structure belong to the species, or is an accidental variety, or merely the result of injury, I cannot determine, having seen only one specimen. In the following fish, considered to be a variety by Kroyer, the rays at the extremity of the tail are straight.

The *skull* is moderately convex transversely, without prominent ridges, and increases in transverse diameter towards the occiput, which is shelving. There are twenty-two abdominal vertebræ and seventy-one caudal ones. The ribs are very small, being shorter as well as much more slender than the parapophyses.

Dimensions.

Total length	6·7 inches.
From premaxillary symphysis to anus	2·5



Length of head to gill-opening	1·2 inches.
Width of ditto	0·52

GYMNELIS VIRIDIS, var. UNIMACULATUS.

G. *subconcolor, ocello unico nigro prope initium pinnæ dorsalis.*

Radii: B. 6–6; D. 95; A. 70; C. 8; P. 12; V. 0.

PLATE XXX., fig. 1, 2, nat. size.

This fish has such a general resemblance to the figure of *Ophidium stigma* of Bennet, published in the Zoological Appendix to Captain Beechey's Voyage to the Pacific (p. 67, pl. xx. fig. 1), that I was inclined to consider it to be the same species, until I observed that Dr. Collie mentions "very small scales" as existing on his fish. A single specimen only of *stigma* was procured in Kotzebue Sound. Mr. Lay's sketch, from which the figure was engraved, is said to have been slight, and neither his notes nor Dr. Collie's are sufficiently detailed on the more essential points to render even the genus certain. The specimen we have figured was obtained by Sir Edward Belcher, in Northumberland Sound, and is so like *Gymnelis viridis* in its general form and structure, that I readily follow the example of Kroyer and treat it as a mere variety. This author, in the ichthyological plates of Gaimard's Voyage to Scandinavia, represents three varieties of *Gymnelis viridis* (pl. xv.). Fig. *a* is the portrait of an individual having a row of four small eyed spots on the base of the dorsal, one of them over the anus, two before it, and two still lesser ones behind it. Fig. *b* has a single spot nearly in the situation of that shown in our Plate VIII., and fig. *c* is without spots on the dorsal, but has about twelve transverse, pale, irregular bars on the body, of which the fifth is over the anus.

The integuments of the fins are rather more delicate in our *unimaculatus* than in the specimen figured in Plate VII., which is to be attributed perhaps to its greater youth. Each ray of the proximal portion of the anal has a small lobe at its point

formed of the integument, but near the caudal the rays are smaller and more crowded, so that these cutaneous lobes become obsolete. There are smaller and less distinctly formed tips on the dorsal, and in that fin likewise the posterior rays are more slender and more closely approximated. Generally the rays are simple, tapering, and jointed, the most distal ones being however divided at the tips.

The caudal rays are direct, parallel to one another as well as to the axis of the fish; slender, short, touching each other, and occupying so little space as not to interfere with the acuteness of the tail: they are inserted into the terminal base of a triangular interspinous bone, whose apex is attached to the last vertebra. The numbers of rays given at the beginning of the article were ascertained after repeated trials, and are correct, as regards the vertical fins, within two or three of the whole number, the slender rays near the caudal occasioning doubt to that extent. The rays of the caudal itself are easily counted by aid of the lens, and there is little difficulty with the pectorals. Skin as in the preceding species; the pores are less conspicuous, but seem to be similarly situated to those of the spotless variety represented in Plate VII.

Length of *head* contained rather more than six times in the total length, and distant rather more than its own length from the anus. The latter orifice is placed exactly at the end of the first third of the whole fish. The eyes are two of their own diameters removed from the tip of the gill-cover, and approach within one diameter of the tip of the snout.

Dimensions.

Total length	5·10 inches.
From premaxillary symphysis to tip of gill-cover, mouth closed	0·81
From ditto to anus	1·70
Length of pectoral	0·40
Height of head at the nape	0·40
Breadth at ditto	0·40

MERLANGUS POLARIS (Leech).

Merlangus polaris, Sabine, App. Parry's First Voyage, p. ccxi.; Ross (Sir James Clark), App. Parry's Third Voyage, p. 110.

RADII.

B. 7–7; D.	12–15–19=46;	A. 17–21=38;	C. 45;	P. 19;	V. 6*
„	13–14–19=46;	16–23=39;	45;	19;	6†
„	14–16–19=49;	17–22=39;	42;	18;	6‡
„	13–15–20=48;	17–21=38;	42 to 48;	18;	6§

This species was discovered on Sir John Ross's first voyage to Baffin's Bay, and was named by Dr. Leach, but was first published by Colonel Sabine, who describes a specimen that was taken by a net when swimming on the surface of Baffin's Bay, on Sir Edward Parry's first voyage in search of a North-west Passage. Sir James Clark Ross also mentions this fish in the Appendix to Parry's Third Voyage, and there states that it is abundant in all the Arctic seas that had been visited by the North-west Expeditions up to that time. The specimens that form the subjects of the present notice were obtained by Sir Edward Belcher in Northumberland Sound, being the most northerly position in which the fish has been taken. It was seen in great numbers in Parry's second voyage, in the Duke of York's Bay, north of Southampton Island, and Sir James Ross informs us that it is the principal food, in certain seasons, of numerous sea-fowl. When hotly pursued by the *beluga*, or white whale, it has been observed, in its endeavours to escape, to leap by hundreds on the ice: the members of the Expedition profited by this circumstance, and by its being frequently left by the ebbing tide in quantities in rocky pools, to obtain several excellent meals.

Sir Edward Belcher's specimens appear to be young, and the species may, for anything we know, attain a considerable size, in which case there must be some change in its external

* Belcher, pale specimen.
† Ditto, dark specimen.
‡ Sabine.
§ Ross, average

appearance. It approaches *Merlangus virens* in the numbers of its fin-rays, but if the figure in Mr. Yarrell's excellent work on British Fishes be a correct representation of that fish, the resemblance between the species is not close.

Description.

Form, in general, much like that of an ill-conditioned haddock (*Morrhua æglefinus*). The head forms one-fourth of the total length of the fish, being proportionately longer than that of the cole fish (*M. carbonarius*), which *polaris* resembles in colour. Nearly a third of the length of the head is occupied by the large eye. At the occiput the fish is moderately compressed, the thickness there being one-third less than the height. In the specimens the bellies are shrunk, but were the intestines full of food the abdomen would most likely be prominent, as is usual in the *Gadi*. Under the first dorsal the body is highest, and there the height is equal to twice the thickness. Towards the tail the compression gradually increases.

The mouth is cleft as far back as the anterior third of the orbit; the under jaw is a little the longest. A single row of minute acicular teeth, rather widely set, arms the premaxillaries and mandible; some of them are rather taller than the others. On the chevron of the vomer the teeth are short, rather stoutly subulate and curved, and stand also in a single series. There are no teeth on the palate bones.

The lateral line is straight, without any arched curve behind the pectoral, but with a slight deflection from the suprascapular region. Small, soft, round, silvery scales cover the surface of the body, being deeply imbedded in the skin, and not becoming detached so readily as those of *M. carbonarius*. The whole skin of the head and body is minutely speckled with round, black dots, equably dispersed; the upper parts have a dark grey general tint, and the ventrals and anal fins are white.

Fins.—In having naked spaces separating the several fins of the back and also the two of the belly this fish resembles the

cole fish, but the spaces are larger than even in that species. All the back fins are highest in front, at the second or third ray, and gradually lower in an even line to the last ray, which is very short in all. The first dorsal therefore has not the conical form of *M. virens*, as represented in Yarrell's figure. The second dorsal is the highest of the three, and the third occupies more of the dorsal line than the others. The anals are moderately arched in outline, and the second exceeds the first in the numbers of its rays more than in the other *Merlangi*. The pectorals are narrow and pointed, and the ventrals end in a long hair-like tip, the second ray being the longest. Caudal deeply and acutely notched at the end, with acute lobes. The following comparative table is drawn up to exhibit the differences in the fin-rays of various *Merlangi*:—

	Dorsal fins.	Anal fins.	
M. polaris . .	13–15–19 = 47 ;	17–22 = 39	Mean of different authors.
M. vulgaris .	13–19–18 = 50 ;	31–20 = 51	Yarrell.
M. carbonarius	11–20–20 = 51 ;	24–19 = 43	Yarrell.
M. pollachius .	12–19–15 = 46 ;	24–16 = 40	Yarrell.
M. virens . .	13–20–19 = 52 ;	24–20 = 44	Linnæus.
M. virens . .	13–20–19 = 52 ;	26–22 = 48	Reinhardt.

Sir James Ross took the trouble to count the rays of many examples of *polaris*, and found considerable variety in the numbers. The quotation from him at the beginning of this article gives the means of his reckoning.

Dimensions.

	Pale species.	Dark species.
Length from premaxillary to tip of caudal	4·60 in.	4·90 in.
Length from premaxillary to anus . . .	2·00	2·12
Length from premaxillary to gill-opening .	1·15	1·20
Width at occiput	0·45	0·50
Height behind the eyes	0·65	0·75
Diameter of the eye	0·30	0·33

The *Merlangus carbonarius* and *M. virens* are likewise inhabitants of Davis's Strait, and another species was noticed by

Colonel Sabine in Winter Harbour, Melville Island, but the specimens he obtained were so much decayed that he does not venture to say whether they belonged to the genus *Merlangus* or to *Morrhua*. In the hinder mandibular teeth being tricuspid it seems to be peculiar, and differs widely from *polaris*. He enumerates the fin-rays as follows:—*Radii*: D. 13–19–20; A. 20–20; C. 40; P. 18; V. 6. These numbers approach nearest to those of *polaris*.

EXPLANATION OF THE PLATES.

PLATE XXIII. PHOBETOR TRICUSPIS.—Fig. 1, profile; 2, upper view of head; 3, under view of head; 4, premaxillary teeth:—all of the natural size.

PLATE XXIV. COTTUS GLACIALIS.—Fig. 1, profile; 2, plan of dorsal aspect; 3, teeth of premaxillaries and vomer:—all these of the natural size. Fig. 4, teeth of the upper jaw, magnified.

PLATE XXV. GASTEROSTEUS INSCULPTUS.—Fig. 1, profile, natural size. Fig. 2, dorsal aspect, magnified to twice its linear dimensions. Fig. 3, pelvic bones, much enlarged.

PLATE XXVI. LYCODES MUCOSUS.—Fig. 1, profile; 2, top of the head; 3, under aspect of the head; 4, roof of the mouth; 5, mandible:—all of the natural size.

PLATE XXVII. GUNNELLUS FASCIATUS.—Fig. 1, profile; 2, under surface of head and throat:—natural size.

PLATE XXVIII. LUMPENUS NUBILUS.—Fig. 1, profile; 2, under surface of the head and throat:—natural size.

PLATE XXIX. GYMNELIS VIRIDIS.—Fig. 1, profile; 2, top of the head; 3, under aspect of the head:—natural size.

PLATE XXX. GYMNELIS VIRIDIS, var. *unimaculatus*.—Fig. 1, profile; 2, top of the head:—natural size.

ACCOUNT

OF THE

ARCTIC CARBONIFEROUS FOSSILS.

BY

J. W. SALTER, ESQ., F.G.S.,

OF THE GEOLOGICAL SURVEY OF GREAT BRITAIN.

THE Expedition has been fortunate in supplying some missing links in the Geology of the Arctic regions. Former researches, dating from the time of Parry's voyages, had shown that the great formations of limestone which occupy the coast lines of the western Polar lands, were of Palæozoic age; and while the corals and other fossils from Boothia and Barrow Straits had been compared by Conybeare to those of our Dudley limestone, the fossil plants of Melville Island seemed to be identical in character with those of the coal measures.

The former of these suggestions, viz. that there was much *Silurian* limestone in Polar America, received abundant confirmation from the collections made by Captain Austin's Expedition.* And the inference, drawn from the plants in Melville Island, that the carboniferous rocks were not missing in the north, has been sustained unexpectedly by the researches of Captain Sir E. Belcher and the officers and gentlemen under his command.

* See Appendix, with plates, to Dr. Sutherland's Journal. Longman, 1852.

In the collections now brought home from the very furthest point visited, viz. the northern edge of Albert Land and the islands off that coast, lat. 77° to 77° 15′ N., we can recognize several characteristic carboniferous fossils, and indeed some of our own English species—large *Producti*, corals, etc.; and with these, as we might expect, are forms not yet described.

A short notice of similar fossils from Melville Island, lat. 76°, was offered lately to the Royal Dublin Society by the Rev. Professor Haughton. The collection was made at the same time with those now described, and presented to the society by Captain M'Clintock—a name well known as that of a zealous Arctic explorer. Among the fossils the Professor recognized one, if not two, identical with those of the carboniferous rocks of Britain.

But although these familiar fossils had never, before the late Expedition, been found in so high a latitude, we were in some degree prepared to meet with the marine equivalents of the carboniferous formation in one part or another of the great Arctic basin, both from the circumstance of fossil shells of that date having been found near the Slave Lake and along the Mackenzie, by Richardson,* and more especially from their occurrence in the northern part of the eastern hemisphere, even so far north as 74° 30′, off the North Cape. In the Transactions of the Royal Academy of Philosophy at Berlin, the Baron Von Buch described, in 1846, fossils of this age brought home by Keilhau from the rocky islet called Bear Island (Bären Insel) in that latitude.†

This islet, which lies to the south of Spitzbergen, is barely a mile in circumference, and is chiefly composed of limestone resting on coal shales, which, according to Von Buch, contain ferns of the genus *Pecopteris*.

The overlying limestone, which forms steep cliffs, was found to contain the large *Productus giganteus*, together with *P.*

* 'Narrative of a Journey,' etc. See also Murchison's 'Siluria, p. 427.

† Von Buch, in Physikalische Abhandl. der Königl. Akad. der Wissenschaften (Berlin), vol. for 1846, p. 65, plate.

punctatus and *Strophalosia striata*, besides Corals and Bryozoa of the carboniferous type, and a species of *Spirifer* which Von Buch thought worthy of a separate account, and a comparison with other large exotic species.

The chief interest attaching to the last-mentioned fossil is, that the same peculiar *Spirifer* was found by Sir E. Belcher in company with the species about to be noticed.

It would be out of place here to notice the valuable contribution to Arctic geology made by Professor Koninck* of Liége, in which he shows distinctly the occurrence of the Permian rocks in Spitzbergen itself, in a latitude as high as that of Albert Land, were it not for the indication it affords of higher and higher geological horizons as we approach the pole; thus giving confirmation to another discovery of Captain Belcher and his associates, and which has just been elaborated by Professor Owen, viz. that secondary rocks—with bones of *Ichthyosauri!*—are to be detected in these Cimmerian regions. Some lias' shells, too, are quoted by Professor Haughton (in the communication above adverted to), from Prince Patrick's Land, 76° 30′; so that there seems no good reason to doubt that true Lower Secondary strata, *in situ*, are to be found in this the extremest point of the western polar land; and that when these fossils were deposited, conditions of climate something like those of our own shores were prevailing in latitudes not far short of 80°.

It is not allowed to enter here into the speculations to which such discoveries must lead, and we return to the description of the fossils, premising that some of them—*Productus Cora*, *Spirifer Keilhavii*, etc.—were found on the top of Exmouth Island itself, the sandstone cliffs of which are capped by the limestone; and close upon this again lie the Ichthyosaurian bones. The greater part however of the fossils were weathered out on loose slabs which strewed the coast, particularly at Depôt Point, on the northern side of Albert Land, where

* First published in the Bull. de l'Académie Royale de Belgique (1846), vol. xiii. p. 592, and again repeated, with figures, in vol. xvi. No. 12.

they were very abundant, mixed with some pieces of Silurian limestone like those found by Penny and his comrades in the Wellington and Queen's Channels.*

Many new forms of these Silurian fossils remain undescribed, and some of great beauty were brought home by Captain Belcher himself. At present we can only notice the carboniferous species.

FUSULINA HYPERBOREA (n. sp.).

Plate XXXVI., fig. 1–3.

The mountain limestone has been long known to contain Foraminifera of this type. One, the *F. cylindrica*, Fischer, is characteristic of the formation in Russia, and a smaller round species abounds in parts of the Caucasus.† The one found by Sir E. Belcher at Depôt Point is peculiar for its shape, being constricted in the middle instead of fusiform; the septa are highly undulated, and the several folds touch each other so closely as to look like reticulated tissue in a section. It may be shortly characterized thus:—

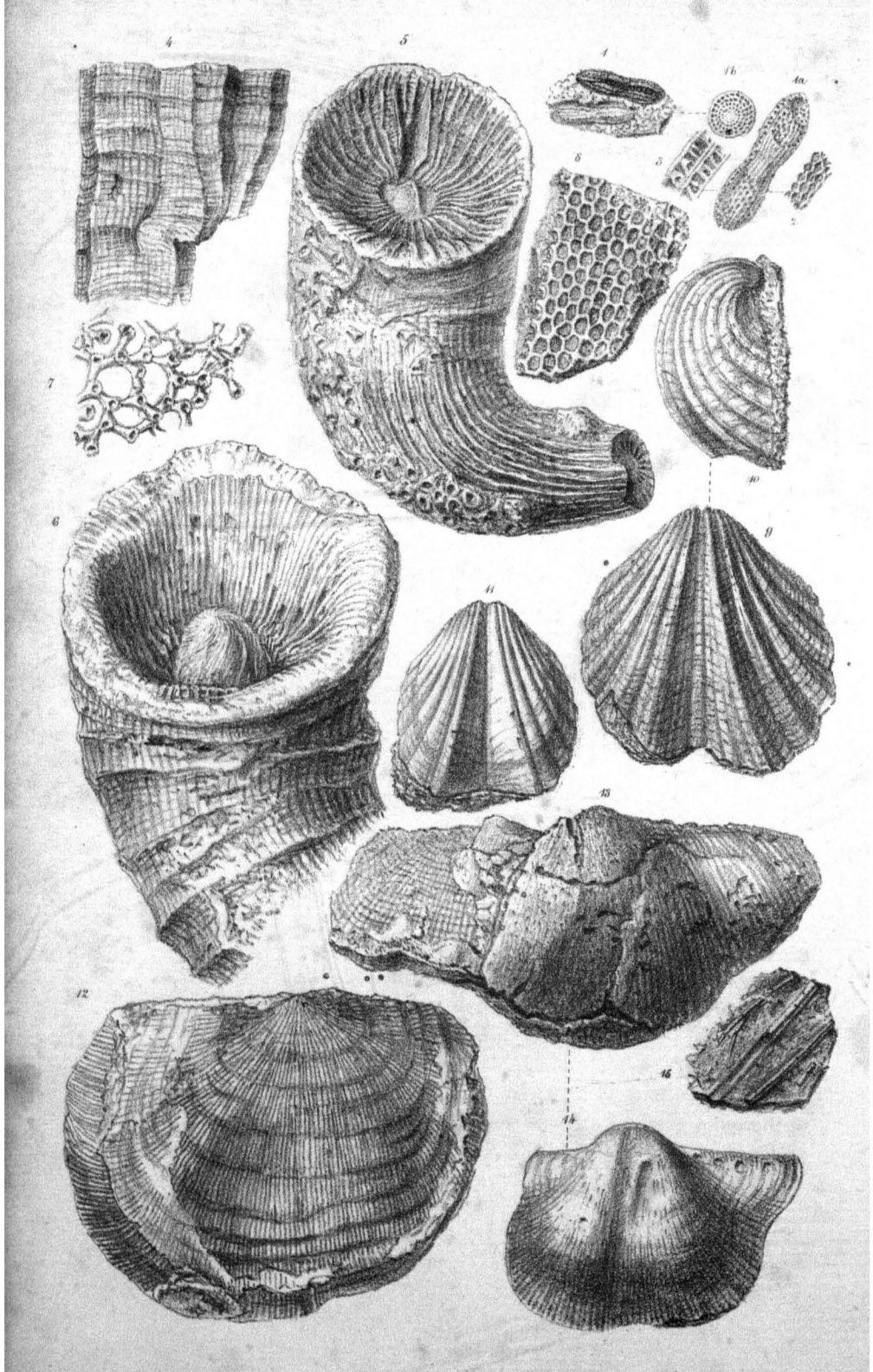
Five-eighths of an inch wide, subcylindrical, obtuse at the ends, constricted in the middle: whorls about seven or eight, of which four are conspicuous and of nearly equal width. Septa rather closely placed, excessively undulated (like a frill or furbelow), especially on their peripheral edge, with no plain median space; slit small, linear, on the inner margin of the septum.

We have both polished transverse and longitudinal (1 *b*) sections and weathered specimens (1 *a*) of this fine and remarkable species.‡ In the latter, where the whorls are worn down

* I strongly suspect there is a *Devonian* formation also here, but have not the means at present to work it out. *Atrypa reticularis*, with *Spirifer*, *Orthis*, and *Rhynchonella*, occurs in a blackish earthy limestone in Cardigan Strait, on the coast of North Yorkshire.

† Siluria, p. 335.

‡ The common *F. cylindrica*, which is not half the size of the *F. hyperborea*, is called by the Russian peasants "petrified corn," which it exactly resembles. Ours is more like an hour-glass with rounded ends.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so as to show the inner portions of the septa, these are found to be scarcely more undulated than in the *F. cylindrica;* but there is no plain central space, the small median fissure being merely a linear perforation on the wavy surface. The outer portion of the septa, on the contrary, is excessively waved, so much so that the forward bends of two contiguous undulations often touch (fig. 3), and even coalesce and form a reticulate tissue. And in accordance with this, a longitudinal (*i. e.* spiral) section (1 *b*) shows the inner portion of the septa slightly curved and simple, while the outer and larger portion is deeply waved, and often (from a section of the extreme undulation) apparently branched. The septa, too, in the outer whorls are evidently more undulated than those of the inner ones, and towards the obtuse ends of the shell they are probably a good deal twisted, as the reticulate tissue there is complicated and confused in the sections.

Fig. 1, natural size; 1 *a*, slightly magnified—a weathered specimen, showing the slightly undulated inner septa; 2, a portion of these magnified; 1 *b*, a cross section (longitudinal), with four or five conspicuous whorls, and one or two obscure central ones; 3, a rough section, magnified, of two of the outer chambers, with their highly undulated septa.

Locality.—In loose blocks at Depôt Point, Albert Land; gregarious.

STYLASTREA INCONFERTA (Lonsdale).

Plate XXXVI., fig. 4.

Syn. Lonsd. in Geol. Russ. vol. i. 621; pl. A, fig. 2.

At first sight this fossil, of which there are numerous examples in Sir E. Belcher's collection, looks so like the common *S.* (*Lithostrotion*) *basaltiforme* that it would be readily mistaken for one of its varieties. On comparing it, however, with specimens from Kendal, which have the same general internal structure, it is found to differ considerably "in the greater dimensions of the columns, in the more open structure of the interior, and in the centre being much less occupied by prolongations of the lamellæ." In these respects it agrees

well with Lonsdale's description of the species from the east side of the Ural; and his figure is very like, in the size of the tubes and their irregularly corrugated surface. The cross section, too, agrees very well in the comparatively few (38–40) lamellæ, of which only half are conspicuous, the intermediate ones being exceedingly short and obscure, in the wide space occupied by the central flattened tabulæ, and in the loose vesicular tissue. I do not think there is much doubt of their identity.

The British *Stylastrea* from Kendal has more numerous lamellæ (54 or 60), the intermediate ones being considerably developed and only a little shorter than the rest, and the vesicular tissue is closer and more abundant.

Stylastrea, being without any elevation of the tabulæ into a crest or columella, seems to be a natural division. Professor Milne Edwards is inclined to regard the absence of that organ as accidental: it is, however, characteristic of the two species above noticed.

Locality.—Depôt Point.

There are among these Arctic corals one or two species of *Lithostrotion* with a central axis—one particularly abundant; and there is also a large *Michelinea*, growing to a parabolic mass five or six inches high and four inches across, and with the calices half an inch in diameter.

ZAPHRENTIS OVIBOS (n. sp.).

Plate XXXVI., fig. 5.

Nine to ten inches high and two in breadth, curved, sometimes strongly, and either gradually tapering or somewhat abruptly conical at the base, and thence cylindrical, and often a little contracted above. The surface is smooth, and regularly marked by ridges of growth about half a line apart, but seldom with constrictions: the calyx circular, deep, rather thin-edged, with numerous (36–44, or even 60 in a large specimen) prominent septa extending to within the margin of the smooth central tabula, which is elevated in the middle into a narrow crest continuous with the primary septum, but not

carried into the *fossula*. The latter is rather large, deep, placed on the (dorsal) curved side, and not at all invading the central tabula. One, or more frequently two, of the septa are abbreviated by it. The intermediate septa are extremely small and quite marginal.

The vesicular tissue is close and conspicuous between the septa, and in the cross section it forms a definite outer zone only three-eighths of an inch wide in a specimen two inches and a half in diameter. The horizontal tabulæ are wide, close set, not reaching quite across the central space, but imbricating. The lamellæ are nearly straight and equal, and leave only about one-third of the diameter free from them.

This is rather doubtfully referred to the genus. It has a thin crest-like columella connected with the primary septum opposite to the fossula, and should therefore be a *Lophophyllum* (Edw. et Haime). But this crest is so rudimentary in some specimens, and the habit is so much that of *Zaphrentis*, that we leave it for the present among them. It has well developed central tabulæ bare of lamellæ in the middle, and in this respect it is like the other large species, *Z. fungites*, *Z. cylindrica*, etc.

The septa are strong and continuous, and appear to extend all down the visceral chamber, and not merely to be spread out on the surface of the tabulæ. This is shown both in weathered casts and in transverse polished sections. Perhaps this indicates an approach towards the *Cyathaxonidæ*.

A rough resemblance to the horn of a ruminant has suggested the specific name.

Locality.—Very common among the loose fragments at Depôt Point. It is generally well preserved. A *Zaphrentis*, probably the same species, occurs further to the east, in Princess Royal Island, and at the entrance of Jones's Strait.

CLISIOPHYLLUM TUMULUS (n. sp.).

Plate XXXVI., fig. 6.

A curved and twisted trumpet-shaped tube four inches long, annulated by rough ridges of growth and marked by faint

longitudinal ribs. The oblique cup two inches broad, thick-edged and deep, with the margin recurved, lined by about ninety close and nearly equal lamellæ (the intermediate ones being as strong as the others) descending to the bottom of a deep hollow a line broad, which surrounds the strong conical boss in the centre. The latter is almost cylindrical, more than half an inch broad and long, and much nearer to the concave than to the convex side of the tube. A few only of the principal ribs rise upon it irregularly, and one of them forms a considerably twisted ridge or crest. The boss is formed of close vesicular tissue (apparently twisted when weathered), a more open tissue occupying the spaces between the lamellæ.

At first sight one is inclined to separate this from *Clisiophyllum*, although in general form it is very like *C. coniseptum* or *C. turbinatum* of the mountain limestone. Milne Edwards has particularly mentioned the ribs on the conical axis of *Clisiophyllum* as straight, and in the English species they are stout lamellæ (inosculating a little), and one of them is generally elevated into a ridge or crest upon the boss. In the Arctic fossil this crest is present, but carried up upon the boss with a twist; and the state of weathering of the boss itself in our specimen is so complete as nearly to obliterate the straight lamellæ, and show the complicated (and apparently spiral) edges of its vesicular plates, so that it looks as if it were a large simple species of *Lonsdalia*, as that genus is defined by Milne Edwards (*Strombodes* of M'Coy). It is however a genuine *Clisiophyllum*, and differs from all we know by its very numerous equal lamellæ, the secondary ones reaching nearly all the way down the cup, and being as large as the principal ones; and further, by the great height and prominence of the boss, which is narrow compared with the breadth of the cup. The *C. coniseptum*, Keyserling, has a somewhat twisted arrangement of the lamellæ, but a much broader and less elevated boss.

Locality.—Depôt Point.

SYRINGOPORA (AULOPORA) sp.

Plate XXXVI., fig. 7.

These reticulating creeping tubes overrun large specimens of the *Zaphrentis* before described. Such fossils used to be called *Aulopora*, but they are the young stoloniferous base of a *Syringopora*. This was first suggested to us by the late Professor E. Forbes, on examining the carboniferous fossils at Hook Point, in Wexford, where these corals abound. It has however been clearly shown to be the case by Professor Milne Edwards and J. Haime in their great work on Palæozoic Corals, (Archives du Muséum d'Hist. Nat. vol. v.)

It is impossible to say to what species of *Syringopora* such may belong, unless the full-grown coral were found with them. In size and shape they agree pretty well with the young portions of *S. geniculata*, so common in the English carboniferous limestone.

LOCALITY.—Depôt Point; frequent (on large corals).

FENESTELLA ARCTICA, n. sp.

Plate XXXVI., fig. 8.

Portions of foliaceous plane fronds, which must have measured several inches across. The branches are thicker than broad, rounded on the non-poriferous face, slightly but regularly zigzag, and fully a third of a line broad; they are regularly radiating and bifurcating over the general surface; irregular, and some of them much thickened below. Fenestrules broad, oval, a line long, and fully twice the width of the branches. They are very regular in size and shape, those at the bifurcation of the branches being similar and equal to the rest. Non-poriferous surface very finely striated, appearing smooth to the eye; pores —— ?

As we have nothing of the poriferous face, it may seem hazardous to give a name to this fossil; it is however a large and fine species, extremely regular in the disposition of the branches and size of the perforations, and will be easily recog-

nized, should any collectors visit in future its rugged habitat. *Fenestella Martis*, of Fischer (Oryct. Gouv. Moscou, pl. xxxix., fig. 2), is not unlike it, but the apertures are oval and but little broader than the interstices or branches, which are decidedly thicker than in ours. The same may be said of the *F. cribrioculata*, Verneuil, figured in Count Keyserling's 'Reise in Petschora-land,' pl. iii., fig. 7, which has neither so flat a surface nor such large perforations.

Locality.—Depôt Point.

SPIRIFER KEILHAVII (Von Buch).

Plate XXXVI., fig. 9, 10, 11.

S. Keilhavii, Von Buch, Trans. Roy. Acad. Philos. Berlin, 1846, p. 65, fig. 2 in the plate.

Syn.—*S. Saranæ*, De Vern., in Keyserling Reise in Petschora, pl. viii., figs. 4, 5.

There can be no doubt of the identity of this shell with that so carefully described by Von Buch from the "Producten-Sandstein" of Bear Island. The square form, short hinge line,* elevated beaks, and broad deep plaits with ribs upon them, all agree exactly; and we think that the variety we have figured (fig. 11) will agree equally well with Count Keyserling's figures of the *S. Saranæ* from Petschora. It is so distinct a species from any European ones as not to need comparison, and Von Buch has compared it with its allies from New Holland and South Africa.

Our specimens are all of the larger ventral valve. In the ordinary variety (figs. 9 and 10) they are an inch and a half long, and as much broad, with the hinge-line, in full-grown shells, shorter than the entire width. Beak very convex, elevated and incurved, furrowed to the apex, from which radiate

* Von Buch says, "It belongs to the division in which the hinge line is as long as the shell." This must be intended to mark its relations with broader-winged Spirifers rather than with the smooth rounded forms, for one of its best characters resides in the very *short* hinge-line.

thick and broad folds, six to eight on each side (six or seven in our specimen). They are not quite simple, except near the hinge, but furnished with one or two ribs on the sides of the principal ones. The folds are rather angular, and much broader than the furrows between them, but the sinus is as broad as the largest ribs, and has about seven "fine, not broad ribs,"* one of which is central and more conspicuous.

The ventral valve, according to Von Buch, is only slightly convex.

The variety *Saranæ* (fig. 11) differs in having no central rib in the sinus, which is therefore angular and deep; but it shows the faint ridges both in the sinus and on the principal ribs. These are rather more numerous (fully seven) and distinct up to the hinge area, where the shell is sharply incurved. The ribs are rounder and not quite so angular as in the other variety.

Locality.—Depôt Point; also in red limestone, Exmouth Island (Belcher), with the next.

PRODUCTUS CORA (D'Orbigny).

Plate XXXVI., fig. 12.

Our figure is an expanded and somewhat irregular specimen of the under (dorsal) valve, or rather the impression of its surface on the red limestone. The margin in this valve is abruptly turned down after the shell has attained a couple of inches in length, to fit the corresponding portion of the upper valve. This indicates that the latter must have been highly convex, and there are other smaller specimens of the upper valve from the same locality, more regular in form and with the beak prominent. The striation in both valves is characteristic, the wavy striæ being elevated threads, with furrows intervening wider than the ribs themselves. The striæ increase in number continually by implantation, appearing to bifurcate

* In his figure the supplementary ribs are a little stronger than in our specimens.

in the cast,* and in the flatter valve the new one frequently remains for a long distance much smaller than the others, and even vanishes and reappears after an interval. Both striæ and furrows are crossed by numerous fine decussating lines.

No traces of spines are visible in our few specimens, which agree in all respects (except perhaps in having a somewhat thicker shell) with British examples of the *P. cora*. It is very interesting to find this species, which is so universally spread over the warmer parts of the globe, from India to the Andes, and which has been described from Siberia and Bear Island, ranging into these extreme northern latitudes.

Locality.—Top of Exmouth Island, *in situ*, in a reddish limestone of a kind not found at Depôt Point. N.B. The bones of the Ichthyosauri were found in close proximity, on the highest point of the Island (Belcher).

PRODUCTUS SEMIRETICULATUS (Martin), *var.* FRIGIDUS.

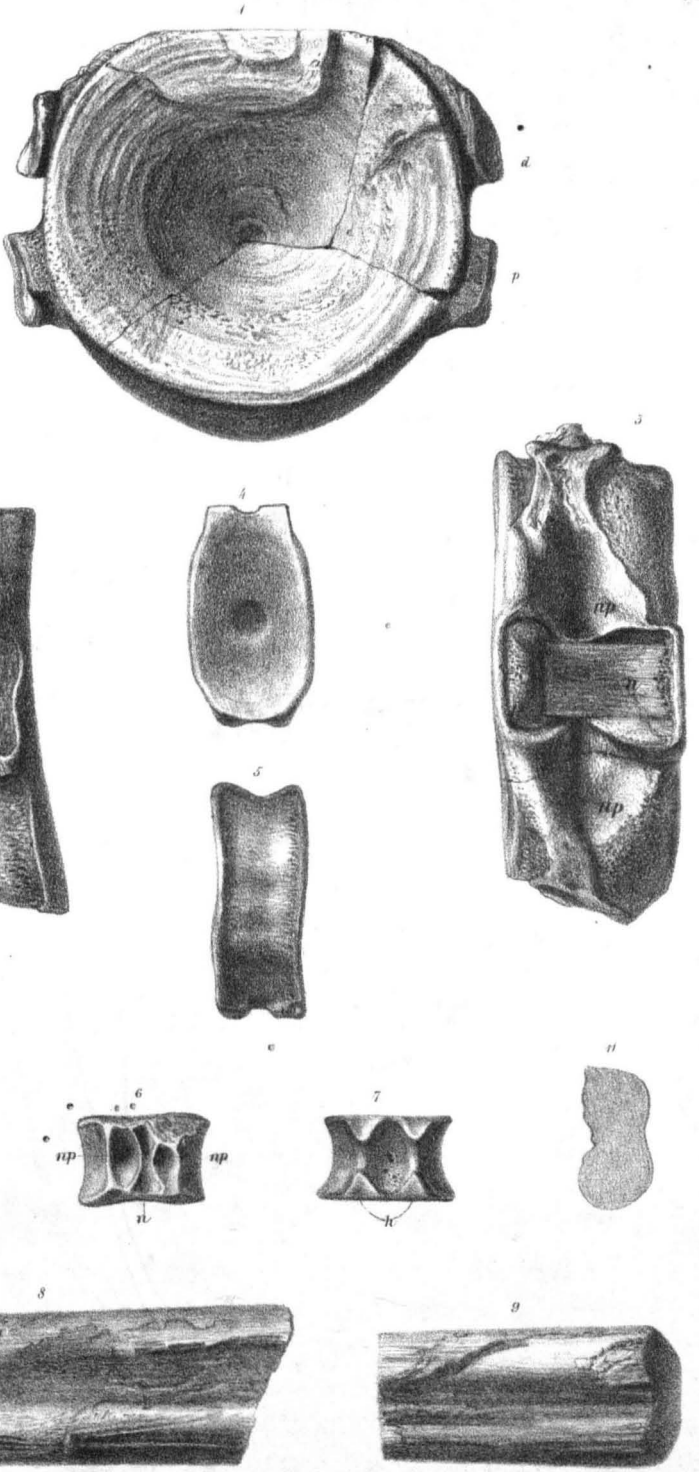
Plate XXXVI., fig. 13, 14.

Five inches wide and nearly three long; larger valve very gibbous at the beak, strongly and widely bilobed; ears produced and very distinct; concentric plaits less strong than the others; spines numerous; a distinct row parallel to the hinge margin, and another obliquely sloping from it. Under valve at first flat, then bent strongly down at right angles.

Notwithstanding the wide bilobation of this shell, we cannot think it anything but a conspicuous form of the variable *P. semireticulatus*. It has the same kind of coarse striation and concentric decussating plaits, very well shown in the left half of our figure 3, where the lower or dorsal valve is seen, the rest being broken away.

The form is certainly more transverse than usual, and the ears very distinct. In these particulars it resembles *P. ex-*

* This should always be borne in mind in describing fossil brachiopods, viz. that a rib interposed between two others will appear in the cast of the surface as a dividing furrow on a ridge.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pansus of De Koninck, a Russian species; but, besides that being a very much smaller shell, De Koninck particularly says, that near the cardinal edge the ribs are very fine or absent, and that there is *no trace* of cardinal tubes along them. His figure agrees with this description.

In plate ix. of his excellent monograph* he has given a figure of a very wide variety, strongly bilobed, but not so deeply as ours, and without the submarginal spines which other specimens show; and in thus enumerating the many varieties and extensive range of the species,† he gives us additional reason for admitting this one as a Polar variety.

All the specimens are striated coarsely, though our figure 14, which is very much worn, shows them but faintly. There are some large loose shining tubes (fig. 15) in the rock, which probably belong to this fossil.

Locality.—Depôt Point, in whitish and also in reddish limestone.

The two carboniferous species identified by Prof. Haughton from Melville Island are, *Productus aculeatus* and *Spirifer (rotundatus ?)*.

J. W. S.

Note on some Remains of an Ichthyosaurus discovered by Captain Sir Edward Belcher, C.B., R.N., at Exmouth Island, in lat. 77° 16′ N., long. 96° W. By Professor Owen, F.R.S., F.G.S.

The specimens submitted to me by Captain Sir Edward Belcher, which form the subjects of Plate XXXI., are fossil remains of vertebræ and portions of ribs of an *Ichthyosaurus*.

Figs. 1, 2, and 3 represent the largest and best preserved fossil, which is the body of an anterior abdominal vertebra.

* Monogr. des *Productus*, etc., in Recherches sur les Anim. foss. première partie, 1847.

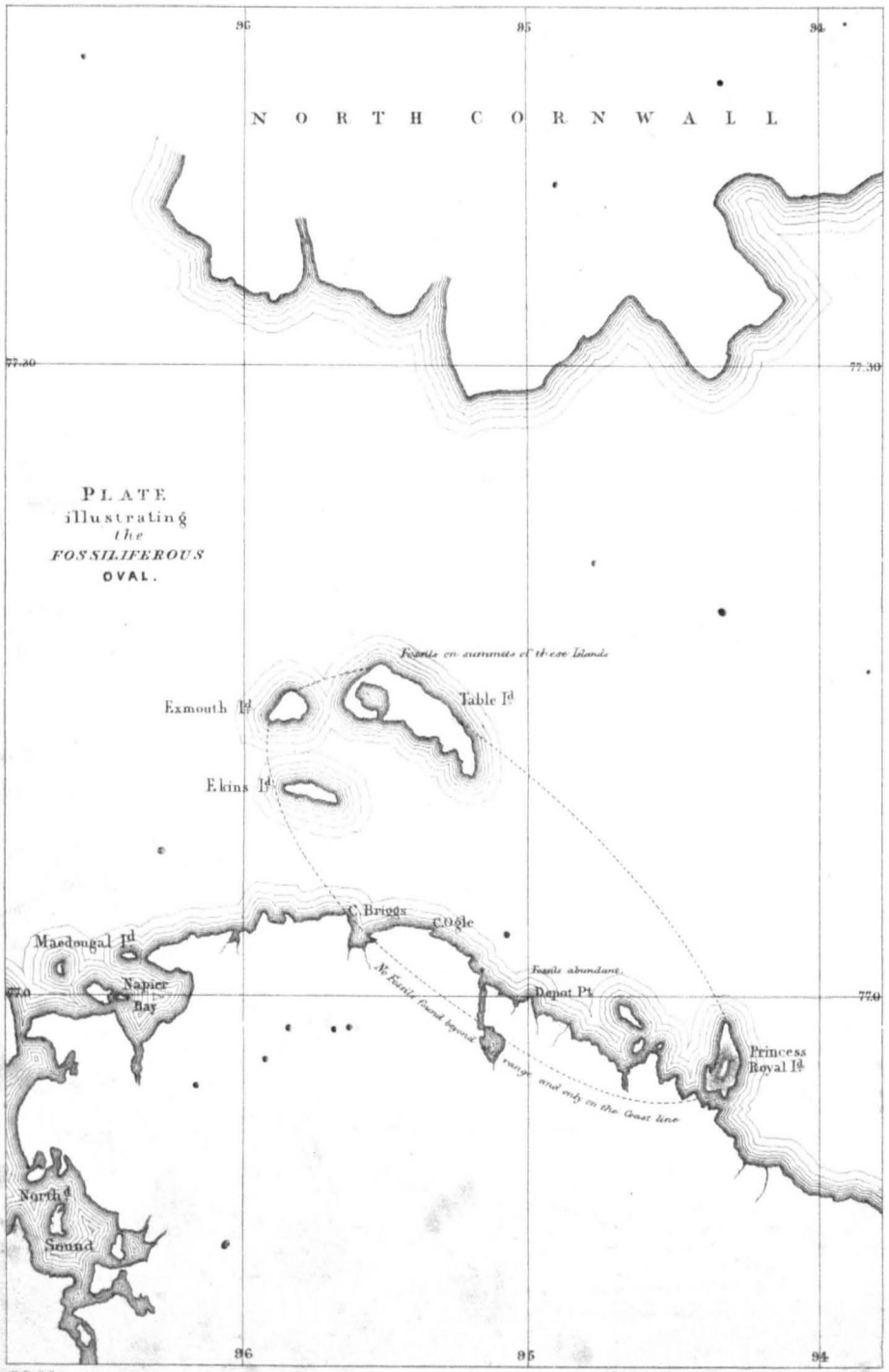
† Even up to the Icy Sea in Russia.

It presents the ichthyic character of the concavity of the articular surface on both the front and back part of the centrum *c*; with the character of coexisting diapophyses *d* and parapophyses *p*, not known in fishes, but which the *Enaliosauria* present in their anterior trunk-vertebræ, in common with the *Dinosauria, Crocodilia,* and other highly organized reptiles. The generic characters of the *Ichthyosaurus* are manifested in the shortness (*i. e.* the relatively small fore and aft diameter) of the centrum as compared with its breadth and height, and in the shape of the neurapophysial surfaces *n p,* and their proportions to the neural surface *n*. With regard to the specific character of this vertebral centrum, its proportions pretty closely accord with those of the *Ichthyosaurus acutus* from the Whitby lias; but this would be quite inadequate ground for a reference of the Arctic Ichthyosaur to that species in the absence of any evidence of the shape of its skull and dentition.

Figures 4 to 7 are of a terminal caudal vertebra, of the natural size, apparently of the same species of Ichthyosaur and probably from the same individual as the vertebræ figs. 1–3, from the more advanced part of the body.

The small caudal vertebra equally manifests the Ichthyosaurian characters in its degree of biconcavity and in the form of the neurapophysial pits *n p*; the lateral compression of the centrum indicates the vertical development of the tegumentary tail-fin it helped to support: on the under surface are four surfaces for the hæmal arches, which are articulated, as in the Crocodiles, at the vertebral interspaces to two contiguous centrums.

Figs. 8 to 11 are portions of ribs. The long, free, thoracic-abdominal pleurapophyses, or vertebral ribs, of the *Ichthyosaurus* are peculiar for the deep longitudinal groove which impresses them on each side, giving to their transverse section the form represented in fig. 10. Two fragments of ribs, figs. 8 and 9, found associated with the before-described vertebræ, present this grooved character, and, with the vertebræ, afford cumulative proof of the Ichthyosaurian nature of the Arctic fossils represented in Plate XXXI.



E.B.del.

Vincent Brooks Lith. King St. Covent Garden.

Sir E. Belcher has kindly forwarded the following note on the locality of the above-described fossils:—

"The position on which these remains were found is situated in latitude 77° 16′ N. and longitude 96° W., 570 feet above the level of the sea. The base of the island is a friable, disintegrating sandstone, which has been worn away on all sides, leaving the concentric elevation, equal to one-third of its original diameter, rising abruptly from its base, so much so as to be accessible only on its western end.

"The summit is capped by a limestone formation of about one-fifth of the entire height, say 114 feet, resting on the sandstone, and having a dip at its western end (as may be noticed in Plate IV.) of seven degrees.

"It was at the right-hand pile marked on the Plate that, in the construction of the cairn, fossils were noticed; and at the last moment, on finishing the pile, two specimens were presented by one of the men, apparently fossil bones, but, from anxiety to proceed and save the season, were hastily thrust into the pocket, and consigned, with others, for future scrutiny. This happened at the end of the season in 1852. In 1853 no opportunity offered for revisiting the island; but, from specimens found on Table Island and on the main, the sole range of fossils was found to run in the assumed oval curve which would be formed by the dotted line connecting the Exmouth, Table, and Princess Royal Islands, continued by the mainland up to Cape Briggs.

"It is remarkable that no fossiliferous limestone is met with on the *westernmost pile* of Exmouth Island, nor on any of the lands outside of this oval space; and, excepting very rare specimens, no fossils of any kind reappear until reaching the entrance of Cardigan Strait, in 76° 38′ N., where it only occurs in boulders on the beach, and in the next position southerly, Cape Eden, in 75° 30′ N., where the 'Assistance' wintered in 1853–4. Between Cape Eden and Beechey Island fossils again become rare, and in the latter region do not appear to extend much beyond Cape Riley easterly. All the intervening localities seem to furnish the magnesian limestone or the old greywacke formations."

ACCOUNT OF THE SHELLS

COLLECTED BY

CAPTAIN SIR EDWARD BELCHER, C.B.,

NORTH OF BEECHEY ISLAND.

BY

LOVELL REEVE, F.L.S., F.G.S.

The additions made by Sir Edward Belcher to the Molluscan Fauna of the Arctic Seas are greater than might have been expected from the researches already made in that direction, by Fabricius, Parry, Möller, and Loven. Out of forty-five species dredged in Wellington Channel and Northumberland Sound, comprised in the following list, scarcely half of them have been hitherto noted as inhabiting Greenland, and only one-third of them range so far south as our own shores. Twelve of the species have not been hitherto described, but three had been previously known as doubtful.

LYMNÆA (Draparnaud).

L. Vahlii, Möller, Index Moll. Grœnlandiæ, p. 4.
Limnophysa Vahlii, Beck.

L. Holbollii, Möller, Ind. Moll. Grœn. p. 5.
Limnophysa Holbollii, Beck.

BULLA (Lamarck).

B. sculpta (Pl. XXXII. Fig. 3 *a*, *b*, *c*). Bul. testâ ovatâ,

solidiusculâ, spirâ minutè immersâ, anfractibus sub lente transversim minutissimè et creberrimè impresso-striatis; pallide fulvâ.

The chief peculiarity of this species consists in the surface being very minutely and closely impressly-striated across.

B. nucleola (Pl. XXXII. Fig. 2 *a, b, c*). Bul. testâ oblongo-cylindraceâ, medio subcoarctatâ, lævigatâ vel striis incrementi arcuatim notatâ, apice angulato-immersâ, sulco latiusculo; intensè fulvo-castaneâ.

Of a compressly oblong-cylindrical form, with the spire so impressed as to show a broad internal groove, the shell being coated throughout with a dark fulvous-chestnut cuticle.

B. semen (Pl. XXXII. Fig. 4 *a, b, c*). Bul. testâ cylindraceo-ovatâ, tumidiusculâ, spirâ depresso-convexâ, suturâ impressâ, anfractibus lævibus, convexiusculis, ultimo anticè paululum descendente; fulvescente-albâ.

Of a short cylindrical form, somewhat swollen, with a depressly convex spire, having the suture faintly channelled.

Hab. Port Refuge, in ten fathoms, mud.

NATICA (Lamarck).

N. septentrionalis, Beck, Möller, Index Moll. Grœn. p. 7.

N. Grœnlandica, Beck, Möller, Ind. Moll. Grœn. p. 7.

MARGARITA (Leach).

M. umbilicalis, Broderip and Sowerby, Zool. Journ. vol. iv. Conch. Illus. Margarita, f. 5.

Hab. Northumberland Sound.

LACUNA (Turton).

L. vincta, Montagu (Turbo), vol. ii. p. 307; Supp. pl. 12. f. 11.

The specimens comprise varieties *labiosa* and *quadrifasciata*.

Hab. Port Refuge.

SCALARIA (Lamarck).

S. Grœnlandica, Chemnitz (Turbo), Conch. Cab. vol. xi. p. 155. pl. 195 A. f. 1878, 1879.

S. planicostata, Kiener.

S. subulata, Couthouy.

Hab. Lievely, Greenland.

BUCCINUM (Linnæus).

B. Belcheri (Pl. XXXII. Fig. 7 *a*, *b*). Bucc. testâ oblongo-ovatâ, basi truncatâ, tenui, anfractibus convexis, spiraliter lineari-sulcatis, aperturâ ovatâ, columellâ arcuatâ, anticè sub-excavatâ, contortâ; intus extusque livido-castaneâ, pellucidâ, epidermide tenui deciduâ indutâ.

Belonging to the same arctic type as *B. ciliatum*, *tenebrosum*, and *hydrophanum*, but clearly distinct from either.

Hab. Port Refuge, in eleven fathoms, mud.

B. scalariforme, Beck, Möller, Ind. Moll. Grœn. p. 11.

B. tortuosum, Reeve.

B. glaciale, Linn. Syst. Nat. (12th edit.) p. 1204.

B. Donovani, Gray, Zool. Beechey's Voy. p. 128.

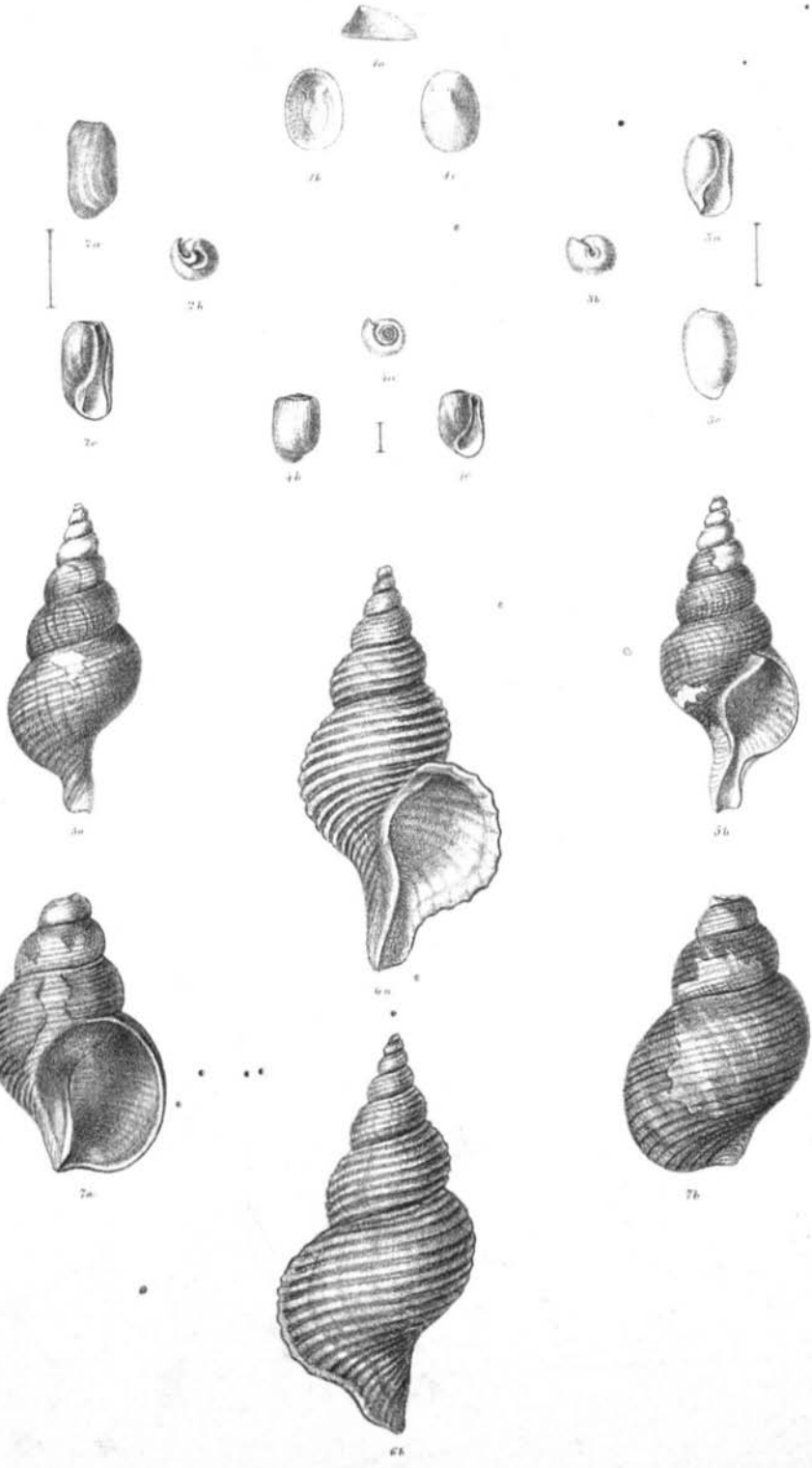
B. glaciale, Donovan.

B. hydrophanum, Hancock, Ann. and Mag. Nat. Hist. vol. xviii. p. 325.

FUSUS (Bruguière).

F. tortuosus (Pl. XXXII. Fig. 5 *a*, *b*). Fus. testâ angustè fusiformi, canali peculiariter contractâ et contortâ, spiræ suturis impressis, anfractibus rotundatis, spiraliter liratis, liris funiculatis, concentricis, versus aperturam minus elevatis, aperturâ parvâ, ovatâ, columellâ arcuatâ, basi tortuosâ; opaco-albâ, epidermide crassiusculâ olivaceâ indutâ.

Very closely allied to *F. Islandicus* and *propinquus*, but distinct from all the varieties of those species by its rounded closely-edged whorls and twisted canal, in which latter character it agrees rather with the little *F. pygmæus* of Gould.



G B Sowerby del et lith.

Vincent Brooks Imp

F. Spitzbergensis (Pl. XXXII. Fig. 6 *a*, *b*). Fus. testâ fusiformi-turritâ, canali breviusculo, vix recurvo, spiræ suturis impressis, anfractibus rotundatis, spiraliter costatis, subfuniculatis, versus aperturam sulco superficiario obsoletè divisis, interstitiis excavatis, aperturâ ovatâ, labro peculiariter effuso; fulvo-fuscâ, costis subnitentibus, columellâ roseo pallidè tinctâ.

This fine species (inserted here from Mr. Cuming's collection) is from Spitzbergen.

TROPHON (Montford).

T. Fabricii, Beck, Möller, Ind. Moll. Grœnlandiæ, p. 14.
Tritonium craticulatum, Fabricius.
Murex borealis, Reeve.

MITRA (Lamarck).

M. Grœnlandica, Beck, Möller, Ind. Moll. Grœnlandiæ, p. 15.

CEMORIA (Leach).

C. cognata, Gould.

PATELLA (Linnæus).

P. cerea (Pl. XXXII. Fig. 1 *a*, *b*, *c*), Möller, Ind. Moll. Grœnlandiæ, p. 16.

A diaphanous white species, decussated with fine radiating linear ridges and concentric striæ of growth. Mr. Cuming possesses specimens from Nôrway.

Hab. Winter Quarters off Cape Eden, in three fathoms, gravel.

ACMÆA (Eschscholtz).

A. testudinalis (Patella), Müller, Zool. Dan. Prodr. p. 237.
P. Clealandii, Sowerby.
P. amœna, Say.
Lottia testudinalis, Gray.
Patelloidea amœna, Couthouy.

CHITON (Linnæus).

C. ruber, Linnæus, Syst. Nat. (12th edit.) p. 1107.
C. cinereus, O. Fabricius.
C. minimus, Spengler.
C. lævis, Loven.

C. albus, Linnæus, Syst. Nat. (12th edit.) p. 1107.
C. aselloides, Lowe.
C. sagrinatus, Couthouy.

PECTEN (Bruguière).

P. Islandicus, Müller (Ostrea) Zool. Dan. Prod. No. 2990.
Hab. Lievely, Greenland.

LIMA (Bruguière).

L. subauriculata, Montagu (Pecten), Test. Brit. Supp. p. 63. pl. 29. f. 2.
L. nivea, Philippi.
L. sulcata, Brown.
L. sulculus, Leach.

NUCULA (Lamarck).

N. Portlandica, Hitchcock (Pl. XXXIII. Fig. 3 *a*, *b*). Nuc. testâ oblongo-ovatâ, gibbosiusculâ, latere postico rotundato, antico subangulato contracto, rostrato, paululum hiante; albidâ, epidermide virescente corneâ indutâ.

Distinguished chiefly by a peculiar flexuous contraction of the anterior side, which is beaked and slightly gaping at the extremity.

N. siliqua (Pl. XXXIII. Fig. 4 *a*, *b*). Nuc. testâ oblongo-ovatâ, latiusculâ, tenuiculâ, tumidâ, latere postico rotundato, antico angulato-flexuoso, deinde concavo, et abbreviato-rostrato; albidâ, epidermide corneâ virescente-olivaceâ indutâ.

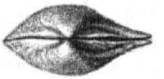
Of the same typical form as *N. Portlandica*, swollen and flexuously beaked, but of broader and more gibbous proportions.

4a

4b

4c

2a



4a

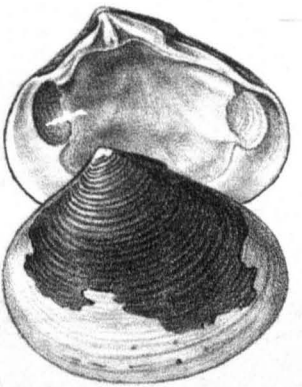
3a

2b

4b

3b

5a

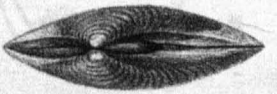


7a

6a

5b

6b



7b

G.B.Sowerby del. et lith.

Vincent Brooks Imp.

Specimens of this species were dredged from a depth of seventy-four fathoms.

N. sulcifera (Pl. XXXIII. Fig. 1 *a*, *b*, *c*). Nuc. testâ subangustè-ovatâ, compressâ, ad umbones gibbosiusculâ, subæquilaterali, latere postico rotundato, antico leviter concavo-flexuoso et obtusè rostrato, valvis concentricè superficialiter sulcatis, sulcis distantibus; albidâ, epidermide virente corneâ indutâ.

A narrow, ovate, flexuously-beaked species, marked with concentric, superficial, widely-separated grooves.

N. expansa (Pl. XXXIII. Fig. 2 *a*, *b*). Nuc. testâ subtrigono-ovatâ, vix ventricosâ, subcompressâ, latere antico brevissimo, truncato, vix nullo, postico rotundato, expansoproducto; albâ, epidermide corneâ cinereo-virente nitente indutâ.

Allied to *N. inflata*, Hancock, but more compressed and more expandedly produced posteriorly.

Hab. Northumberland Sound and Port Refuge.

N. sapotilla, Gould, Invert. Mass. p. 100. f. 61.

LEDA (Schumacher).

L. buccata, Steenstrup, Möller, Ind. Moll. Grœnlandiæ, p. 17.

MODIOLA (Lamarck).

M. marmorata, Forbes (Modiola), Malacologia Monensis, p. 44.

M. tumida, Hanley.

M. Poliana, Philippi.

M. lævigata, Gray, Appendix, Parry's Voy. to North Pole, p. 245.

M. nigra, Gray, Appendix, Parry's Voy. to North Pole, p. 245.

M. depressa, Hanley.

ASTARTE (Sowerby).

A. Richardsoni (Pl. XXXIII. Fig. 7 *a*, *b*). Ast. testâ sub-

trigono-orbiculari, convexo-compressâ, præcipuè ad umbones, umbonibus submucronatis, lateribus concavo-declivibus, areis subangustè excavatis, valvis circa umbones confertim sulcatis, deinde lævibus; calcareo-albâ, epidermide intensè nigro-castaneâ indutâ.

This fine species, of which specimens were first collected by Sir John Richardson at the mouth of the Mackenzie River, may be at once distinguished from those next allied to it, *A. lactea* and *Islandica*, by its more compressed growth and the attenuated prominence of the umboes, from which the narrowly excavated areas on each side slant almost concavely.

A. fabula (Pl. XXXIII. Fig. 5 *a*, *b*). Ast. testâ transversè ovatâ, compressâ, versus umbones subtrigonâ, lateribus utrinque subconcavis, deinde rotundatis, circa umbones regulariter sulcatâ, deinde lævigatâ aut striis incrementi notatâ, areis lateralibus parum excavatis; fulvescente-castaneâ.

Of a compressed triangularly-ovate form, more than usually transverse.

A. globosa (Pl. XXXIII. Fig. 6 *a*, *b*). Ast. testâ subtrigonâ, ventricosâ, transversim minutè sulcatâ, luteo-fuscâ, parte anteriore prominente rotundatâ, parte posteriore obtusâ, truncatâ.—Möller, Moll. Index Grœnlandiæ, p. 20.

Distinguished particularly from all other species of the genus by its globose, heart-shaped, Cyclas-like growth.

CARDIUM (Linnæus).

C. Grœnlandicum, Chemnitz, Conch. Cab. vol. vi. pl. 19. f. 198.

C. edentulum, Sowerby.

Aphrodite columba, Lea.

C. ciliatum, Fabricius.

C. Fabricii, Deshayes.

TELLINA (Linnæus).

T. proxima, Brown, Zool. Beechey's Voy. p. 154. pl. 44. f. 4.

T. sordida, Couthouy.
T. calcarea, Lyell.
Sanguinolaria sordida, Gould.

PANDORINA (Scacchi).

P. arenosa, Möller, Ind. Moll. Grœnlandiæ, p. 20.
Hab. Port Refuge.

SAXICAVA (Fleurian).

S. rugosa, Linnæus (Mytilus), Syst. Nat. (12th edit.) p. 1156.
Saxicava distorta, Gould.

MYA (Linnæus).

M. truncata, Linnæus, Syst. Nat. (12th edit.) p. 1112.

HYPOTHYRIS (Phillips).

H. psittacea, Chemnitz (Anomia), Conch. Cab. vol. viii. p. 106. pl. 78. f. 713.
Terebratula psittacea, Lamarck.
Hab. Principally Northumberland Sound, attached to rocks at a depth of thirty-three fathoms.

ACCOUNT OF THE CRUSTACEA.

BY

THOMAS BELL, ESQ., V.P.R.S.,

PRESIDENT OF THE LINNEAN SOCIETY.

The collection of Crustacea brought by Captain Sir Edward Belcher is not very numerous, but there are a few new species, besides some interesting ones which have been described by former naturalists. The specimens were all obtained by the dredge between Beechey Island and Northumberland Sound, and generally in depths exceeding thirty fathoms.

I have found it necessary in some instances to revise the specific characters given by former writers.

DECAPODA MACRURA.

HIPPOLYTE BOREALIS (Owen).

Thorace cylindraceo, anticè subcarinato, angulo antico-inferiore mutico, caudæ laminâ mediâ spinis minutis 16 ad 20 armatis.

Hippolyte borealis, Owen, in Append. to Captain Sir John Ross's Voyage, p. lxxxiv. t. β, f. 3; Edw. Hist. Nat. des Crust. ii. p. 373.

It was very truly observed by Colonel Sabine, in his account of the Crustacea obtained in Parry's voyage, that the number of teeth on the rostrum in the different species of *Hippolyte* is no good criterion of specific distinction, and this is particularly true of the present species. The rostrum is straight, in some individuals with, in some without, an inferior carina;

in some there are no teeth at all, either on the carapace or the rostrum; in others, a few small inconspicuous serrations, and in others a few small teeth. It is readily distinguished from *H. polaris*, and from all other species, by the characters given above.

HIPPOLYTE ACULEATA (Fabr.).

Thorace gibboso, fortiter quinque-dentato, rostro tenui, pedunculo antennæ superioris vix longiore.

Cancer aculeatus, Oth. Fabr., Fauna Grœnl., No. 217.

Alphæus aculeatus, Sab., App. to Parry's Voyage, p. ccxxxvii. t. ii. f. 9, 10.

Hippolyte aculeata, Edw., Hist. Nat. ii. p. 380.

A single small specimen only was found in the collection, without any distinct locality being named. Colonel Sabine states that several specimens were found at Melville Island. It is at once recognized by the slender short rostrum and the extraordinary gibbosity of the carapace.

HIPPOLYTE POLARIS (Sabine).

Thorace gibboso, anticè carinato, rostro lamellâ antennæ superioris breviore, chelis et unguibus apice nigris.

Alphæus polaris, Sabine, App. to Parry's Voyage, p. ccxxxviii. t. ii. f. 5–8.

Hippolyte polaris, Edw., Hist. Nat. des Crust. ii. p. 376; Owen, in Ross's Voy., p. lxxxv.

In this species the female is so much larger than the male, and the thorax so much more strongly gibbous, that the two sexes might at first sight be readily mistaken for different species. The figure given by Colonel Sabine is that of a male.

The number of teeth on the rostrum varies greatly; I found from two to four on the upper, and from two to five on the under side. Colonel Sabine states from three to six above and from two to six below. Milne Edwards has erroneously given eight to ten on the upper, and two or three on the under side. The carapace has invariably three teeth on the carina.

It would appear to be an abundant species, as there were

numerous specimens in the collection, and Colonel Sabine states that "several were brought up in the same drag-net, from fifty fathoms on the coast of Melville Island."

HIPPOLYTE BELCHERI (n. s.)

PLATE XXXIV., fig. 1.

Thorace subcylindraceo, haud gibboso, rostro recto, abdominis segmento tertio spinâ uncinatâ forti armato.

In this new species, the body is slender and smooth; the carapace nearly cylindrical, with a single tooth at the outside of the orbilar notch, slightly carinated on the anterior half, but not gibbous, the carina with two small teeth; the rostrum straight, narrow, with three very small teeth above and two beneath, in the single specimen observed; the outer filament of the superior antenna thickened near the base, and gradually tapering to the extremity. The abdomen is strongly bent at the third segment, which is armed, near the posterior margin, with a strong hooked spine, curved backwards; the fifth and sixth segments with a small triangular spine at the anterior angle; the seventh (middle lamina of the tail), with five pairs of minute spines above. Antennæ, legs, and pedipalps very slender; first pair of abdominal false feet as large as the others.

Length from rostrum to tail, 1·8 inch.

This species has the strong hooked spine which is characteristic of *H. Sowerbæi*, but it differs widely from it in its general character. It belongs, in fact, with that exception, to the more smooth and slender section of the genus.

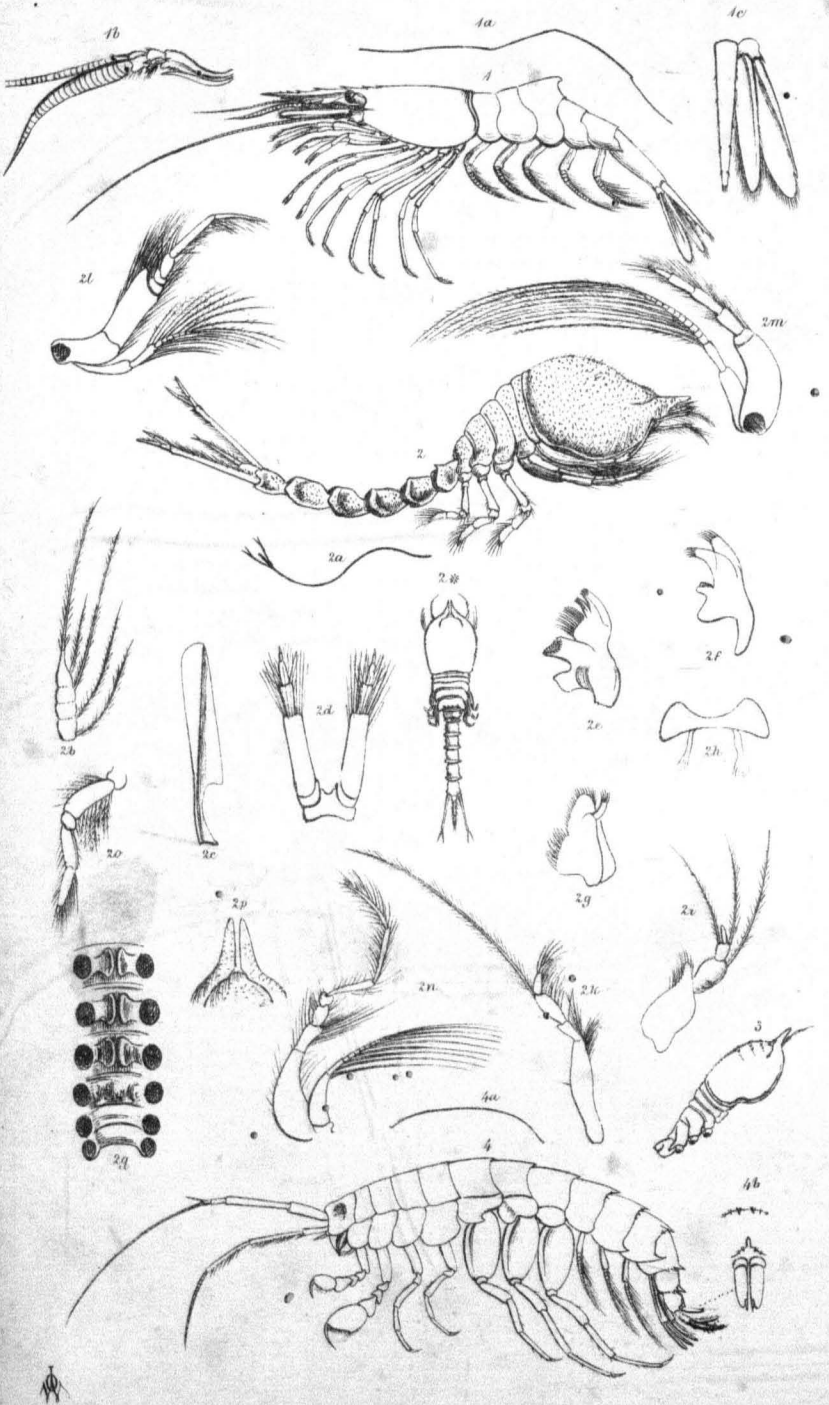
A single specimen only was found in the collection, without any particular locality being designated.

CRANGON BOREAS (Auct.).

Cancer boreas, Phipps' Voy., App. 190. t. 12. f. 1.

Crangon boreas, Sab., Parry's Voy. ccxxxv.; Edw., Hist. Nat. des Crust. ii. p. 342.

Two specimens were obtained, one of which was a remarkably large one.



Vincent Brooks Lith.

Fam. *CUMADÆ*.

ALAUNA GOODSIRI.*

Plate XXXIV., fig. 2.

Rostro recto, segmentis abdominis angulatis.

"In the thirteenth volume of the 'Annales des Sciences Naturelles,' Dr. Milne Edwards described a small crustacean under the name of *Cuma Audouinii;* but in his 'Histoire Naturelle des Crustacés,' he expresses his doubt whether this little animal be anything more than the larva of a decapodous form, and places it amongst other doubtful examples, in an Appendix.

"In 1843, however, Mr. Harry Goodsir published, in the 'Edinburgh New Philosophical Journal,' a very full and clear description of this and two other species of *Cuma* and of two allied species, which he considered as the types of two new genera, to which he gives the names respectively of *Alauna* and *Bodotria*. The whole of these I have ventured to consider, *provisionally*, as constituting a small family, probably belonging to the lower Decapoda, which appears also to be Mr. Goodsir's own opinion, though expressed with doubt, in which doubt I entirely agree. This author satisfactorily determined that they are perfectly developed animals, and not mere larvæ."†

Such is a succinct account of what was known respecting the little animals which I ventured to consider as constituting the family Cumadæ, but the details of their structure given by Mr. Goodsir afforded very imperfect grounds for judging of their real position in the Class.

* It is with a melancholy sense of duty that I dedicate this species to the lamented naturalist, whose untimely fate is connected with the saddest associations; and this feeling is enhanced by the recollection of that remarkable zeal and talent by which he was distinguished, and from which, had he been spared, results the most important to the extension of natural science might have been anticipated.

† Bell's Brit. Crust., p. 321.

The occurrence of a very large specimen of a new species of *Alauna* in Sir Edward Belcher's collection has afforded to Mr. Westwood an opportunity of figuring, for the present Paper, the details of the anatomy of all the essential parts,—a task which, as a reference to the figures will show, he has executed with his usual unrivalled accuracy and tact. These details appear to confirm the opinion that this family must be placed amongst the lower forms of the decapodous group. The number and general structure of the parts connected with the office of manducation, and of the thoracic feet, are entirely consistent with this view; and the structure of the tail, which is formed of the appendages to the sixth abdominal segment and of the seventh, no less agrees with it. The absence of any ocular peduncle however shows an aberration from the type, of such importance as to throw a strong apparent doubt upon the subject. Besides the single large specimen, there are several others in the collection considerably smaller (fig. 3), which differ in some characters, as the less convex form of the carapace, more obvious rugæ on the fore part of it, and the existence of an acute point on each side of the last leg-bearing segment. These may be immature individuals, or possibly males, or they may perhaps be specifically different.

Hab. Wellington Channel, in thirty-five to seventy fathoms.

STOMOPODA.

A single specimen of a *Mysis*, probably *M. Fabricii*, was in too decomposed a condition to be identified with certainty.

AMPHIPODA.

GAMMARUS SABINI (Leach).

Gammarus Sabini, Leach, in Ross's Voyage, ii. p. 178; Sabine, Parry's Voyage, Append., p. ccxxxiii.; Kroyer, Amphip., p. 16. t. i. f. 3; Edw., l. c. iii. p. 50.

GAMMARUS LORICATUS (Sabine).

Gammarus loricatus, Sabine, Parry's Voyage, Append., p. ccxxxi. t. i. f. 7. Kroyer, l. c., p. 22. t. i. f. 4; Edw., l. c., p. 52.

GAMMARUS BOREUS (Sabine).

Gammarus boreus, Sabine, l. c., p. ccxxix.
? *Squilla pulex*, Degeer, Ins. vii. p. 525. t. xxxiii. f. 1, 2.

For an excellent description of this species, and a critical examination of its identity with *Squilla Pulex* of Degeer, I must refer to the original account of it by Colonel Sabine, above quoted.

GAMMARUS KROYERI (n.s.).

PLATE XXXIV., fig. 4.

Antennis superioribus inferioribus dimidio longioribus, abdominis segmentis quatuor anterioribus in medio, secundo et tertio ad angulum inferiorem posticum, in dente productis.

Superior antennæ half as long again as the inferior; the accessory filament extremely minute; the anterior (four) thoracic epimeral plates increasing gradually in size, rounded beneath, the fourth slightly produced at the posterior margin; the fifth and sixth with a lobe at the anterior-inferior portion; the seventh oval. First and second pairs of thoracic feet cheliform; the second with the penultimate joint very broad, obliquely truncate; third and fourth simple; the three following with the third joint very large and oval. Abdominal false feet normal. There is a small triangular dentiform process, directed backwards, on the middle of the posterior margin of the anterior four segments of the abdomen; and the postero-inferior angle of the second and third is similarly produced.

This species has a very close resemblance to *Amphitoë bicuspis* of Kroyer. It is however a true *Gammarus*, as the accessory filament of the superior antennæ does exist, although extremely small.

Hab. Wellington Channel, in thirty-five fathoms.

LYCIANASSA LAGENA (Kroy.).

Lycianassa lagena, Kroy., Grœnl. Amfip., p. 9. t. i. f. 1; Edw. Crust. iii. p. 21.
Anonyx lagena, Kroy., l. c., p. 16.

Of this species numerous fine specimens are in the collection.

AMPHITÖE LÆVIUSCULA (Kroy.).

Amphitöe læviuscula, Kroy., Grœnl. Amfip., p. 53. t. iii. f. 13.; Edw. Crust., p. 30.

AMPHITÖE JURINII? (Kroy.).

A specimen in a broken state occurs, which may probably be of this species.

ACANTHOSOMA HYSTRIX (Owen).

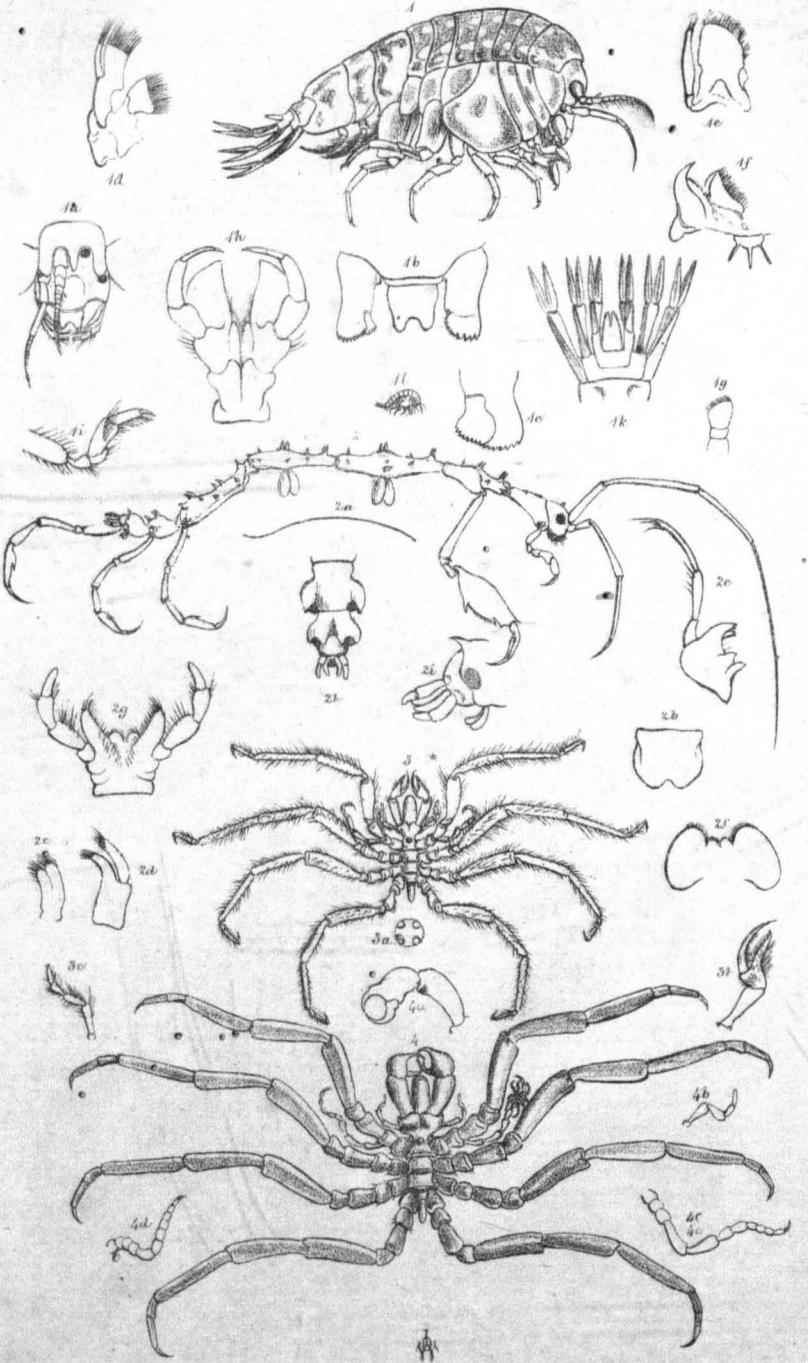
Acanthosoma hystrix, Owen, Append. to Ross's Second Voyage, p. xci., pl. 8. f. 4–7.
Amphitöe hystrix, Kroy., Grœnland's Amfip., p. 31. t. ii. f. 7; Edw. Hist. Nat. Crust. iii. p. 40.

STEGOCEPHALUS (Kroy.) AMPULLA (Phipps).

PLATE XXXV., fig. 1.

Cancer Ampulla, Phipps' Voy. Append. p. 192. t. xii. f. 3; Herbst, ii. p. 117. t. xxxv. f. 2.
Gammarus Ampulla, Sab., Suppl., Parry's First Voyage, p. ccxxix.; Ross, Append. to Parry's Polar Voyage, p. 204.
Amphitöe Ampulla, Edw., l. c., iii. p. 22.
Stegocephalus Ampulla, Kroy., Naturh. Tijdsk., iv. 150.

An opportunity offered, by the occurrence in the collection of several fine specimens of this species, of giving a correct figure of the animal, together with the details of the essential parts of its organization. The figures hitherto published, and referred to above, are exceedingly imperfect and incorrect;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4
4b
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4e

Herbst's is merely a bad copy of that of Phipps. Mr. Westwood's, now given, is remarkably characteristic, and the anatomical details are extremely correct and interesting. A reference to the Plate will render any particular description of these parts unnecessary.

There were numerous young contained in the ovigerous pouch of the female figured in the Plate. They had undergone their metamorphosis, and were in every respect like the parent, with the exception of the antennæ, which were thicker, and less numerously jointed.

Hab. Northumberland Sound, in seven fathoms.

LÆMODIPODA.

CAPRELLA SPINIFERA (n. s.).

PLATE XXXV., fig. 2.

Segmentis omnibus corporis spinis armatis.

The head in this very distinct species is very short, the eyes round and black; the superior antennæ almost as long as the body, of which length the peduncle constitutes nearly half; the first joint cylindrical, half as long as the second, which is slightly enlarged forwards; inferior antennæ about half the length of the superior; the first joint of the peduncle very short, the second only a little longer, the third three times as long as the first and second. Footjaws four-jointed, slightly curved; first segment of thorax somewhat pyriform, with several minute tubercles, and two little spines close to its junction with the head; the second, third, and fourth segments thickened at the middle, at which part is a partial circle of spines, as well as several others at the anterior and posterior part; fifth segment largest at the posterior part, and spined as the others; sixth and seventh segments very short, narrowed anteriorly; the seventh furnished with a pair of simple curved appendages. Abdominal segment extremely small, with two pairs of appendages, of which the smaller pair are simple, and the larger two jointed. Anterior pair of legs slender and weak, scarcely twice

as long as the first thoracic segment; the second pair long and robust; the hand thick, with a strong spine near the base beneath, which is met by the finger when bent. The three posterior pairs slender, the penultimate joint with a small spine or tubercle, meeting the nail when closed, as in the hand of the second pair.

Length of body, 1·4 inch.

Hab. Throughout the Strait: motion barely perceptible.

ISOPODA.

ARCTURUS BAFFINI (Sabine).

Idotæa Baffini, Sab., Append. to Parry's Voy. p. 50. t. i. f. 4–6.
Arcturus tuberculatus, Latr., Reg. An. Cuv., ed. 2, iv. p. 139.
Arcturus Baffini, Westwood, Trans. Ent. Soc. i. p. 72; Edw. Hist. Nat. Crust. iii. p. 123. t. 31. f. 1.

IDOTÆA ENTOMON (Lin.)

Oniscus Entomon, Lin., Faun. Suec. et Syst. Nat.
Cymothoa Entomon, Fabr., Ent. Syst. ii. p. 605.
Idotæa Entomon, Bosc. Latr.; Edw. Crust. iii. p. 128.

Numerous fine specimens of these two species of Isopods are in the collection.

PYCNOGONIDÆ.

NYMPHON HIRTIPES.

PLATE XXXV., fig. 3.

Pedipalparum digito mobili curvo, digito immobili multò superante; pedibus omnibus hirtis.

The rostrum is cylindrical, rounded at the apex; head with the anterior margin notched; the footjaws rather slender, the second joint having the immovable finger straight, the movable one much longer and moderately curved; the palps of the footjaws, or first pair of articulate appendages, five-jointed,

having the thoracic segments nearly equal, the legs with all the joints hairy, the nails abruptly bent.

As there is no figure of *Nymphon hirtum* of Fabricius, it is not possible to ascertain whether the present animal is identical with that or not, but it appears to me that it is distinct, as there is no hairiness about the body of *hirtipes*.

Hab. Northumberland Sound, in thirty-three fathoms.

NYMPHON ROBUSTUM.

PLATE XXXV., fig. 4.

Pedipalparum chelis globosis, digitis valde curvis; pedibus compressis lævibus.

This very large species is remarkable for the peculiar structure of the pedipalps, which are robust and thick, the terminal portion or hand almost globular, with the fingers much curved, meeting at the points, and thus forming nearly a circle; the legs are strong and large, somewhat compressed, and quite naked.

In these descriptions I have considered the segment next to the cylindrical rostrum as the head, of which it is clearly the homologue, as the footjaws and the articulated appendages are attached to the anterior part of this segment.

Hab. Northumberland Sound, in thirty-three fathoms.

EXPLANATION OF THE PLATES.

PLATE XXXIV.

Fig. 1. *Hippolyte Belcheri.*—1 *a*, natural size; 1 *b*, superior antennæ, the tip of the inner filament removed; 1 *c*, terminal segment, with the caudal plates on one side.

Fig. 2. *Alauna Goodsiri.*—2, natural size, viewed above. 2 *a*, natural size. 2 *b*, upper antenna. 2 *c*, one of a pair of delicate knife-like plates, having a thickened line running obliquely from base to apex; the thin outer edge rounded at the tip, folding over on the inner edge; these rest within the concavities of the two portions of the rostrum, and are supposed

by Mr. Westwood, with much probability, to be the representatives of the scales of the antennæ. 2 *d*, two lower antennæ, with the second antennal segment. 2 *e*, mandibles. 2 *f*, upper maxilla. 2 *g*, lower maxilla. 2 *h*, labium. 2 *i*, inner foot-jaw. 2 *l*, one of the first pair of compound feet. 2 *m*, one of the last pair of compound feet. 2 *n*, one of the middle pair of compound feet. 2 *o*, one of the first pair of simple feet. 2 *p*, front of the body seen from above. 2 *q*, under side of the middle portion of the foot-bearing segments; those bearing the compound feet furnished with a pair of flattened compressed leathery plates, the faces of which are opposed to each other.

Fig. 3. The carapace, pedigerous segments, and basal segment of the abdominal portion of the smaller individuals found, of which there were no fewer than twenty-seven. The carapace is less convex, more transversal, rugose at the anterior part; the last leg-bearing segment produced into an acute point on each side.

Fig. 4. *Gammarus Kroyeri*.—4 *a*, natural size. 4 *b*, the two central divisions of the terminal segment.

Plate XXXV.

Fig. 1. *Stegocephalus Ampulla*.—1 *a*, front of head; both antennæ on one side removed. 1 *b*, labium of two mandibles. 1 *c*, under side of left mandible, showing the articulation of the flattened articulated appendage. 1 *d*, first maxilla. 1 *e*, second maxilla. 1 *f*, half of the labrum. 1 *g*, a minute ciliated membranous appendage, which may possibly be a portion of a maxilla. 1 *h*, footjaws. 1 *i*, one of the first pair of feet. 1 *k*, tail-pieces. 1 *l*, one of about fifty young taken from the ovigerous pouch.

Fig. 2. *Caprella spinifera*.—2 *a*, natural size. 2 *b*, upper lip. 2 *c*, "palpigerous mandibles?" 2 *d*, first maxilla. 2 *e*, second maxilla. 2 *f*, labium. 2 *g*, footjaws. 2 *h*, terminal segments of the body seen from above. 2 *i*, the same seen sideways, showing a pair of short exarticulate filaments attached to the last leg-bearing segment, and a pair of similar

appendages, accompanied by a pair of larger two-jointed ones, attached to the minute terminal representative of the abdomen.

Fig. 3. *Nymphon hirtipes*.—3 *a*, oculigerous footstalk seen from above. 3 *b*, chelæ (footjaws). 3 *c*, one of the first pair of articulated appendages (palps of footjaws).

Fig. 4. *Nymphon robustum*.—4 *a*, a chela or footjaw. 4 *b*, palp of footjaw, or first articulated appendage. 4 *c*, one of the ovigerous appendages. 4 *d*, one of the same in one of the young ones attached to 4 *c*.

For the elaborate anatomical details of the Plates, and for the greater part of the description of them which I have adopted, I have to acknowledge my obligation to Mr. Westwood.

INSCRIPTIONS

ON

THE CENOTAPH IN BEECHEY ISLAND.

(VOL. II., P. 231.)

Sacred

TO THE MEMORY OF

MONSIEUR BELLOT,

LIEUTENANT IN THE FRENCH NAVY,

AND

CHEVALIER OF THE LEGION OF HONOUR,

WHO ACCOMPANIED MR. KENNEDY

AND CAPTAIN INGLEFIELD

ON THEIR RESPECTIVE VISITS TO THE

ARCTIC REGIONS.

Whilst attached to H.M.S. Phœnix, under Captain Inglefield, he gallantly volunteered to convey Despatches to Captain Sir E. Belcher, with a sledge crew from H.M.S. North Star.

In a heavy gale of wind on the 18th August, 1853, he was drowned by the disruption of the ice near Cape Grinnell, much lamented by the Arctic Squadron and all who had the pleasure of knowing his value and noble spirit.

Sacred

TO THE MEMORY OF

WILLIAM CUTBUSH,

PRIVATE ROYAL MARINE,

H.M.S. ASSISTANCE,

A NATIVE OF NORTHIAM, SUSSEX,

WHO DIED ON BOARD

ON THE 27TH FEBRUARY, 1853,

AFTER A PROTRACTED ILLNESS FROM

DISEASE OF THE LUNGS,

AGED 34 YEARS.

He served with credit in his corps for upwards of 16 years and 4 months, gaining by his good conduct two badges of merit in addition to the Syrian medal. During twelve months of the above period he served in H.M.S. Assistance, gaining the respect of Captain and officers, and beloved by all who knew him, and died deeply lamented by his shipmates.

Happy are they who die in the Lord.

He lies interred in Northumberland Sound.

Sacred

TO THE MEMORY OF

ISAAC BURNETT,

CAPTAIN OF THE MAINTOP,

AND

GEORGE HARRISS, A.B.,

SEAMAN,

OF H.M.S. ASSISTANCE,

THE LATTER ATTACHED TO H.M.S.

TENDER PIONEER.

ISAAC BURNETT

DEPARTED THIS LIFE

ON 28TH JANUARY, 1854,

AGED 28 YEARS.

GEORGE HARRISS

DEPARTED THIS LIFE

ON THE 9TH JANUARY, 1854,

AGED 30½ YEARS.

Both fell victims to scurvy, although the former laboured primarily under scorbutic affection of the ankle.

Their remains lie interred on shore in Disaster Bay, where H.M.S. Assistance and tender wintered, 1853–4.

Blessed are those who die in the Lord.

Sacred

TO THE MEMORY OF

JOHN AMES, A.B.,

WHO DIED ON BOARD

H.M.S. INVESTIGATOR, AT

BARING ISLAND,

APRIL 11TH, 1853,

AGED 29 YEARS.

Sacred

TO THE MEMORY OF

THOMAS MABLEY,

PRIVATE ROYAL MARINE,

WHO DIED SUDDENLY ON BOARD

H.M.S. RESOLUTE, AT DEALY ISLAND,

OCTOBER 19TH, 1852,

AGED 40 YEARS;

ALSO

TO THE MEMORY OF

GEORGE DROVER,

CAPTAIN OF THE FORECASTLE,

WHO DIED ON BOARD

H.M.S. TENDER INTREPID,

AT DEALY ISLAND,

DECEMBER 12TH, 1852,

AGED 28 YEARS.

Sacred

TO THE MEMORY OF

JOHN COOMBS,

STOKER,

H.M.S. TENDER INTREPID,

WHO DIED SUDDENLY

WHILE TRAVELLING NEAR POINT MIAS,

MELVILLE ISLAND,

MAY 12TH, 1853,

AGED 34 YEARS;

ALSO

TO THE MEMORY OF

THOMAS HOOD,

PRIVATE ROYAL MARINE,

WHO DIED ON BOARD

H.M.S. TENDER INTREPID,

OFF CAPE COCKBURN,

JANUARY 2ND, 1854,

AGED 36 YEARS.

Sacred
TO THE MEMORY OF
JOHN KERR,
GUNNER'S MATE,
WHO DIED ON BOARD
H.M. SHIP INVESTIGATOR
AT BARING ISLAND,
APRIL 13TH, 1853,
AGED 34 YEARS;
ALSO
TO THE MEMORY OF
JAMES WILKIE,
ICE-QUARTERMASTER,
WHO DIED ON BOARD
H.M.S. TENDER INTREPID,
OFF CAPE COCKBURN,
FEBRUARY 2ND, 1854,
AGED 38 YEARS.

Sacred
TO THE MEMORY OF
JOHN BOYLE, A.B.,
WHO DIED ON BOARD
H.M. SHIP INVESTIGATOR,
AT BARING ISLAND,
APRIL 6TH, 1853,
AGED 29 YEARS.

Sacred
TO THE MEMORY OF
THOMAS MORGAN, A.B.,
OF H.M. SHIP INVESTIGATOR,
WHO DIED ON BOARD
H.M. SHIP NORTH STAR,
AT BEECHEY ISLAND,
MAY 22ND, 1854,
AGED 34 YEARS.

Sacred
TO THE MEMORY OF
MR. H. H. SAINSBURY,
MATE,
LATE OF H.M. SHIP INVESTIGATOR,
WHO DIED ON BOARD
H.M. SHIP RESOLUTE,
OFF CAPE COCKBURN,
NOVEMBER 14TH, 1853,
AGED 26 YEARS.

Relieved from earthly sorrow,
Which on my heart hath press'd,
I thank the gentle hand Divine
Which lays this heart to rest.

INDEX.

THE END.

JOHN EDWARD TAYLOR, PRINTER,
LITTLE QUEEN STREET, LINCOLN'S INN FIELDS.